

guished from the true *Casuarius uniappendiculatus* by its rounded greenish casque (lately described by Mr. Walter Rothschild as *C. u. aurantiacus*).

The *Phasianidae* include examples of *Phasianus scemmerringi* and a fine pair of *Gallus varius*. A singular hybrid may also be mentioned; it is stated to be the produce of a female *Platalea minor* from Japan and a male *Ibis melanocephala*. This curious bird somewhat exceeds in size both its parents; the head is feathered as in the Spoonbill, whilst the bill, in general form, nearly resembles the bill of the Ibis, having only the point somewhat flattened. The colour of this bird is white.

Amongst the Pigeons a fine specimen of the Double-crested Pigeon (*Lopholæmus antarcticus*) was remarkable.

But I could go on much longer if I wished to give an account of all the interesting animals seen in this best of all the Continental Zoological Gardens, and I will therefore end here, and only add that if everything is carried out as it has been planned many more improvements will be shortly accomplished, and the whole of the old inconvenient buildings will disappear and be replaced by new ones well adapted for their purposes. How this has been accomplished in so comparatively short a time is Dr. Heck's secret.

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April 3, 1900.

Prof. G. B. HOWES, LL.D., F.R.S., V.P., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of March 1900 :—

The total number of registered additions to the Society's Menagerie during the month of March was 44, of which 29 were by presentation, 6 by purchase, and 9 were received on deposit. The total number of departures during the same period, by death and removals, was 128.

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The following papers were read :—

1. On the Mammalia of Siam and the Malay Peninsula.

By STANLEY SMYTH FLOWER, F.Z.S., 5th Fusiliers.

[Received March 5, 1900.]

In order to write a complete account of the mammals of a country it seems necessary on the one hand to be able to examine the magnificent collection in the British Museum and to look up all the literature on the subject, which can only be done in a large library, and on the other hand to be able to see what specimens are represented in the local museums (where such exist) and

to have a certain knowledge, the more the better, of the animals alive in their own native wilds. The first of these things I have been unable to do, but having fortunately had opportunities of examining the mammals contained in the three museums which exist in the Malay Peninsula and the one in Siam, and having seen many alive, it may be useful to put these notes on record (as some account of the species occurring in these countries is much needed), hoping that they may help some more competent writer hereafter to compose a full catalogue.

The chief paper on the Mammals of the Malay Peninsula is Dr. Theodore Cantor's Catalogue, published in 1846, in the Journal of the Asiatic Society of Bengal (vol. xv. nos. 171 and 172), in which 93 species found wild in the Peninsula are enumerated. In the P. Z. S. 1886 Mr. Oldfield Thomas gave an account of the Mammals presented by Mr. A. O. Hume to the British Museum (Natural History); in this paper (pp. 72-79) 28 species are recorded from the Malay Peninsula, mostly from specimens collected by the late Mr. Davison.

Mr. H. J. Kelsall, R.A., in the Journal of the Straits Branch of the Royal Asiatic Society, no. 26, pp. 16 and 17, Jan. 1894, has recorded 13 species of mammals collected or observed during a journey from Kuala Indau to Batu Pahat, in Johore. And Mr. H. N. Ridley has published three papers on this subject:—(i.) "On the Dispersal of Seeds by Mammals," J. S. B. R. A. S. no. 25, 1894, pp. 11-32. (ii.) "List of Mammals recorded from Pahang," J. S. B. R. A. S. no. 25, 1894, pp. 57 to 60, in which 35 species are recorded. (iii.) "The Mammals of the Malay Peninsula," Nat. Science, vol. vi., nos. 35, 36, and 37, Jan., Feb., and March, 1895, in which about 46 species are mentioned by name.

In Dr. Jean Gerard Koenig's journal of his voyage to Siam (translation, J. S. B. R. A. S. no. 26, 1894) there are very few references to the mammals of the country; they are as follows:—

(P. 126) 8th Nov. 1778, at mouth of Bangkok River: "A squirrel was shot, whereupon the whole wood was filled with the screaming of the monkeys. The back, sides, and tail of this *Sciurus* were dark grey, and towards the surface of the hair yellow; the mouth and the round ears were black, the stomach rust-coloured brown; it was twice as big as the *Sciurus palmarum*."

(P. 145) 8th Dec. 1778, at Ayuthia: "In a bush I saw an Indian hare, with his half-naked neck, only covered with short, soft, black hair. The *Sciuri* are much rarer here than on the Coromandel Coast, and the Palm-Squirrel, which is generally so common, I have not seen at all here."

(P. 161) 4th Jan. 1779: "As I have mentioned the place where they found the gold (on the land-route from Mergui to Bangkok), I will add the tale of some Christians, who made this journey, concerning a class of creatures which are probably the *Homo lar*. This animal is said to walk erect, and to live principally on honey; and as the Siamese consider its skin and flesh to have some medical virtues, they kill it in the following manner:—Those

who go out for this purpose take two bamboo sticks, of about an arm's length, which they hold close to their arms. As soon as the animal sees the man it comes up to him and seizes one of his arms with signs of joy and as if it wanted to caress him. The man drops one of the bamboo sticks, which the animal keeps in his paws, and which it contemplates with joy and admiration; meanwhile the man seizes the other bamboo, and hits the animal over the head, until it is dead. The animal is said to be good-natured, but it only lives in the densest forests."

H.B.M. Vice-Consul, Mr. T. H. Lyle, has lately made an interesting collection of Siamese mammals: unfortunately I have had no chance of seeing these.

I have to acknowledge my sense of obligation to Mr. Oldfield Thomas, for his kindness in identifying specimens which I have sent home from time to time; also to the Curators of the local Museums, Dr. R. Hanitsch of Singapore, Mr. A. L. Butler of Kuala Lumpur, and Mr. L. Wray, junior, of Taiping; and also to Mr. H. N. Ridley, Director of the Singapore Gardens.

The classification and nomenclature in this paper are according to Mr. Blanford's volume on Mammals in the 'Fauna of British India'—an invaluable work which I carried everywhere with me and found a most interesting and charming companion. But in the division of *Sciurus* into several genera I have followed Mr. O. Thomas (A. M. N. H. ser. 7, vol. ii. no. 9, Sept. 1898, p. 249).

The following table shows the number of species of the ten Orders of Mammals represented in the Siamese and Malayan Fauna:—

Order.	No. of Species.	
Primates .....	15	(p. 312.)
Carnivora .....	37	(p. 322.)
Insectivora .....	7	(p. 336.)
Chiroptera .....	42	(p. 338.)
Rodentia .....	36	(p. 351.)
Proboscidea .....	1	(p. 365.)
Ungulata .....	15	(p. 366.)
Cetacea .....	5	(p. 376.)
Sirenia .....	1	(p. 377.)
Edentata .....	1	(p. 378.)

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*Alphabetical List of Localities in the Malay Peninsula and Siam mentioned in this Paper.*

*Alma*, a planter's estate in Province Wellesley.

*Alor Star*, the capital of Kedah, about 6° 8' N., called "Muang Seiburee" by the Siamese.

*Anghin*, a village near the head of the Gulf of Siam, anchorage for ships during N.W. monsoon.

*Ayuthia*, the former capital of Siam, about 60 miles (in a straight line) from the mouth of the Menam.

- Bakar Bata*, a suburb of Alor Star, formerly a brickfield, now containing the Sultan's Rest-house.
- Balik Pulo*, a village in the interior of Penang.
- Bamvasor*, a place mentioned by Finlayson (see *Rhizomys*); I have not identified it.
- Bangkok*, the present capital of Siam, about 17 miles (in a straight line) from the mouth of the Menam.
- Bangkok River*, a name for the branch of the Menam on which Bangkok is situated.
- Bangpakong*, a river entering the Gulf of Siam about 25 miles E. of Paknam Menam.
- Batang Padang*, a mountain in the south of Perak.
- Battambang*, the Cambodian province of Siam.
- Batu Caves*, a few miles from Kuala Lumpur, in Selangor.
- Batu Gajah*, a town in the Kinta district of Perak.
- Batu Pahat*, coffee-estate, on west side of Johore, about halfway between Malacca and Singapore.
- Bawtong Kabin*, the gold-mines of Kabin in Siam, up the Bangpakong River.
- Baw Yakar*, a gem-mine near Pailin, in the Battambang Province of Siam.
- Birman*, or *Bernam*, a river and district in the north of Selangor.
- Blaken Mati*, a fortified island on the south side of Singapore Island.
- Blanja*, a place in Perak.
- Bukit Gantang*, a hill in Perak.
- Bukit Timah*, a hill near the centre of Singapore Island, of which it forms the highest point.
- Changi*, a place near the east end of Singapore Island.
- Chantaboon*, an important town in South-east Siam, about 10 miles from the sea.
- Dindings*, the smallest of the five "Straits Settlements," situated on the coast of Perak.
- Dong Phya Fai* ("Forest of the Lord of Fire"), a hilly tract covered with jungle, about 50 miles across, between Ayuthia and Korat in Siam, abounding in animal life.
- Dumdruan*, an abandoned estate on the slopes of Gunong Pulai, in Johore.
- Genkoi*, a village in Siam on the Ayuthia side of the Dong Phya Fai.
- Georgetown*, the capital of Penang, founded by Capt. Francis Light.
- Girbee River*, Malay Peninsula, latitude 8° 0' N.
- Gunong Batu Putih* ("White Stone Mountain"), in interior of Malay Peninsula.
- Gunong Gajah* ("Elephant Mountain"), an isolated limestone mass in Kedah.
- Gunong Janeng*, a mountain in Johore.
- Gunong Jerai*, or "Kedah Peak," in Kedah, a prominent landmark north of Penang.
- Gunong Pulai*, a mountain in Johore, 2220 feet high, about 20 miles from Johor Bharu.

*Indau*, a river in Johore flowing into the China Sea.

"*Isles of Kullam, Straits of Malacca*" (Dobson, Cat. Chir. B. M. p. 49), possibly Kerimun.

*Jaffaria*, in Johore.

*Jaram, Jelang, and Jerome*, localities in Selangor.

*Jenan*, a shooting-box of the late Tunku Yacob of Kedah, on the road to Singora.

*Johore*, a Malay State at the southern end of the Malay Peninsula, protected but not administered by England. Capital, Johore Bahru.

*Kabin*, a town up the Bangpakong river in Siam, famed for gold-mines in the vicinity.

*Kedah* (spelt by Cantor "Keddah"), a Malay State on the west coast of the Peninsula, north of Province Wellesley, ruled by its own Sultan, nominally subject to Siam. Capital, Alor Star.

*Kinta*, a district in Perak.

*Klang*, a town in Selangor, the port for Kuala Lumpur.

*Klong Morn*, a canal running westward from Bangkok.

*Korat*, a town in Eastern Siam, about 15° N.

*Ko-si-chang*, an island near the head of the Gulf of Siam, abounding in Millipedes.

*Kota Glanggi*, Kota (=Fort), in Pahang.

*Kota Tinggi*, in Johore.

*Kuala Indau*, in Johore.

*Kuala Kabang*, in Johore.

*Kuala Kangsar*, in Perak, formerly the seat of Government.

*Kuala Lambilong*, in Pahang.

*Kuala Lumpur*, the capital of Selangor, with a Museum.

*Kuala Muda*, on the west coast of the Peninsula, boundary of Province Wellesley and Kedah.

*Kuala Semantan*, in Pahang.

*Kuala Tahan*, in Pahang.

*Kussoom*, in Junkceylon.

*Lumbatuah*, in Pahang.

*Lancary, Lancavy, or Lancaurie*, a large island off the coast of Kedah.

*Laos*, the country of the Laos in Northern Siam.

*Larut*, a district of Perak; the Larut Hills culminate in Gunong Higau, 4678 feet.

*Lumut*, in the Dindings.

*Malacca*, town and district, the third in importance of the five "Straits Settlements."

*Matang*, a town in Perak between Taiping and the Straits of Malacca.

*Maxwell's Hill*, in the Larut Hills, Perak.

*Menam*, the great river of Siam.

*Muang Pran*, in Siam.

*Muar*, a small State tributary to Johore, between Johore and Malacca.

*Muok Lek*, a village in the Dong Phya Fai, Siam, about 900 feet above the sea.

*Negri Sembilan* ("the Nine States"), a confederacy of small Malay States under British protection and administration between Malacca and Sungei Ujong.

*Ophir*, Mount, in Malacca.

*Pachin*, a town on the Bangpakong river in Siam, capital of the district.

*Pahang*, a large Malay State on the east of the Peninsula, protected and administered by England. Capital, Pekan.

*Pailin*, a mining centre in the Battambang province of Siam.

*Pakchom*, a village in Siam on the Korat side of the Dong Phya Fai.

*Paknam Kabin*, that part of Kabin where the two chief affluents of the Bangpakong meet.

*Paknam Menam*, a village near the mouth of the Menam.

*Pakpreo*, a village in Siam between Ayuthia and the Dong Phya Fai.

*Passir Hitam*, in Perak.

*Patriew*, a town on the Bangpakong river in Siam: great trade in rice.

*Pekan*, the capital of Pahang.

*Penang*, or Prince of Wales' Island, an island, the second in importance of the five "Straits Settlements." Capital, Georgetown.

*Perak* (pronounced Péra), a large Malay State on the west of the Peninsula, protected and administered by England. Capital, Taiping.

*Petchaburi*, a town in Siam.

*Phrabat*, a shrine in Siam.

*Piah River*, in Upper Perak.

*P'ngkalan Repoh*, in Johore.

*Poongah*, or *Pungah*, in Junkceylon.

*Prachai*, between Ayuthia and Korat in Siam.

*Pramau*, in Pahang.

*Pulo Panjang*, Gulf of Siam; an island which I have not identified, mentioned by W. L. Selater (Cat. Mamm. India Mus. ii. p. 20).

*Pulo Tawar*, a place which I have not identified, mentioned by Ridley (J. S. B. R. A. S. no. 25, 1894, p. 58).

*Pulo Tikus*, a village in Penang, also a small islet lying off Penang.

*Pulo Tioman*, a large mountainous island lying off the east coast of the Peninsula, latitude 2° 50' N.

*Pulo Ubin*, an island between Singapore and Johore.

*Purlis*, or *Perlis*, a small Malay State on the west coast of the Peninsula, tributary to Kedah.

*Raheng*, a town in Siam.

*Rantan Panjang*, in Selangor.

*Ratburee*, a town in Siam.

*Salanga*, Junkceylon.

*Selangor*, a Malay State on the west of the Peninsula, protected and administered by England. Capital, Kuala Lumpur.

*Sembrong*, a river in Johore, flowing into the Straits of Malacca near Batu Pahat.

*Serendah*, near Kuala Lumpor, Selangor.

*Simpai*, on the Batu Pahat, Sembrong, in Johore.

*Simpang*, in Perak.

*Singapore*, island and town, the capital of the Straits Settlements; with a Museum.

*Singora*, on the east coast of the Peninsula, tributary to Siam.

*Sungei Pandang*, a river in the south-west of Singapore Island.

*Sungei Ujong*, a Malay State on the west of the Peninsula, protected and administered by England.

*Tahan River*, in Pahang.

*Tahkamen*, a village on the Bangpakong river in Siam, between Pachim and Kabin.

*Taiping*, or *Taipeng*, the capital of Perak: with a Museum.

*Tanjong Kopang*, in Johore.

*Tapah*, a town in the south of Perak.

*Taroar*, in Junkeeylon.

*Telok Anson*, a port in the south of Perak.

*Temerloh*, in Pahang.

*Tringgarru*, a Malay State on the east of the Peninsula, nominally subject to Siam.

*Ulu Langhat*, in Selangor.

*Ulu Pahang*, Upper Pahang.

*Wellesley Province*, the 4th of the five "Straits Settlements," on the Peninsula opposite Penang. Capital, Butterworth.

## Order PRIMATES.

### Family SIMIIDÆ.

The Gibbons (exclusive of the Siamang) are collectively known to the English in the Straits Settlements as "Wawaas." The Malays generally use the same term (written "Wowwow" by Cantor, p. 2), and also "Ungka etam" for the dark-coloured and "Ungka puti" for the light-coloured forms. The Siamese call them "Chanee."

#### 1. HYLOBATES LAR (Linn.). The White-handed Gibbon.

*Hylobates lar*, Blanf. Faun. Ind., Mamm. p. 7.

Cantor (p. 2) records this species from the "Malayan Peninsula," and says "the colour varies from blackish brown to light brown, yellowish or dirty white, sometimes uniform, sometimes mottled." The only Malayan specimen I have seen is one in the Selangor Museum, dark brown in colour, obtained near Kuala Lumpur in Selangor. In December 1897 a dead gibbon of this species was brought to me in Bangkok, where it had died apparently in captivity; unfortunately I was unable to ascertain where it had been originally caught. Mr. Kelsall (Journal Straits Branch Royal Asiatic Soc. no. 26, 1894, p. 16) says of the species in Johore: "*Hylobates albi-manus*, Vig. & Horsf., the common black Wan Wau. This species was fairly plentiful everywhere on the Indau and Sembrong rivers. It always goes in small troops." And Ridley (J. S. B. R. A. S. no. 25, 1894, p. 57) writes it "is common in the Pahang jungles."

Dr. Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 8) mentions specimens of *H. lar* being in the Museum at Singapore from Tanjong Kopang and Kota Tinggi in Johore, and from Kuala Lambilong and Lambatuah in Pahang.

*Distribution.* Malay Peninsula, Tenasserim, and perhaps also Pegu and Arakan.

## 2. HYLOBATES AGILIS F. Cuvier. The Agile Gibbon.

Cantor (*op. cit.* p. 3) gives as its habitat "Malayan Peninsula (Malacca, Purlis, Kédah, Pungah), Sumatra:" he also says it appears to be less numerous on the Peninsula than *H. lar*, and that he has not seen the light-coloured variety. Ridley (Mammals Malay Pen. p. 26) writes it "is common in the Malay Peninsula as far south as Johore, but it is not wild in Singapore." In the Museum at Taiping there are specimens of both the black and light varieties from Larut, Perak. In April 1898, when I was in the Larut Hills, a party of these gibbons were to be seen daily in a group of high trees at about 3200 feet elevation; every morning they commenced calling at 6 A.M. and continued till about 10.30 A.M. They must come down almost to the foot of the hills, as I have frequently heard them in the morning from Taiping, which is but little above the sea-level.

At Paknam Kabin in Siam, in March 1897, there was a pet gibbon of the variety *pileatus* said to have been caught in the neighbourhood. Its colour was buffy white, except the hair on the top of the head, which was black, and on its chest, which was very dark grey. The skin of the face and palms of the hands and feet were black.

*Distribution.* Siam, Malay Peninsula, Sumatra.

## 3. HYLOBATES LEUCOGENYS Ogilby. The White-cheeked Gibbon.

*Distribution.* Siam (Forbes, 'Handbook Primates,' ii. p. 158).

## 4. HYLOBATES SYNDACTYLUS (Desm.). The Siamang.

In the Museum at Taiping there are specimens from Kinta and from Upper Perak. In September 1898, with the kind assistance of Mr. Ridley, I obtained a live Siamang, which had been caught in the Negri Sembilan, and which was successfully brought home alive to this Society's Gardens.

Mr. Wray (J. S. B. R. A. S. 1890, no. 21, p. 138) writes of this species:—"A fact which does not seem to be in conformity with the generally received ideas of the habits of the gibbons, is that on both of my ascents of the summit of Gunong Batu Puteh (in the interior of the Malay Peninsula) I heard the cries of Siamangs at between 6000 and 7000 feet altitude. One would have thought that the climate would be too cold and bleak for such delicate animals, but it appears that they can and do voluntarily stand a considerable degree of cold without any inconvenience."

*Distribution.* Malay Peninsula, Sumatra.

In reference to a quotation from a letter of mine in the P. Z. S. 1898, p. 924, "in Perak it (the Siamang) is found south of the Perak River, but not apparently anywhere north of it," Mr. A. L. Butler writes to me (dated Selangor, 30.5.99) saying: "Don't you get the Siamang on the (Larut) Perak Hills? I shot one large male on Maxwell's Hill at 3000 ft., unless I am much mistaken. I did not preserve it, as I was not then collecting monkeys. Oddly enough I shot it in mistake, taking its head, which alone I saw, for a black squirrel sitting bunched up. This was a very large gibbon, entirely black, much bigger than *Hylobates lar*."

No gibbons are found wild in the islands of Penang or Singapore, though they are evidently very generally distributed over the mainland; when met with in the jungle it is very hard to identify the species, and it is but little use and cruel to attempt to shoot them with a shot-gun; if a specimen be needed, kill it with a rifle-bullet. In September 1897, at the foot of Gunong Pulai in Johore, I saw both black and white gibbons of apparently the same species, but I cannot say which. In March 1897, near Takhamen, Siam, there were many in the high trees in the thick jungle; their call was loud and musical, "Pua, pua, pua, pua, pua, pua, pua, pua," beginning slowly and gradually getting faster. One morning we followed up an individual for a long time; it was a very large black gibbon, extremely agile. Occasionally it progressed by running along the boughs, but generally by swinging by its hands; every now and then it leaped down vertically to a great depth among the branches, as if falling, but it never actually came to the ground. In the forest of the Dong Phya Fai (between Ayuthia and Korat), at about 900 feet elevation, I have heard gibbons making a great noise in the early morning; judging from the cry, I should say it was the same species as at Takhamen.

In January 1898 I was shown a live black-faced white gibbon at Chantaboon, said to have been caught in the neighbourhood, which I could not identify. Consul T. ff. Carlisle, writing to me from the Pailin Mines, Battambang Province, Siam, in Feb. 1899, says: "I have seen lots of gibbons round here, and have heard of a reddish-coloured one, but have never seen it."

Very much remains to be done to get a definite knowledge of the species, varieties, and distribution in this region of these very interesting and attractive monkeys.

#### Family CERCOPITHECIDÆ.

##### 5. *MACACUS ASSAMENSIS* McClell. The Himalayan Monkey.

*Macacus assamensis*, Blanf. Faun. Ind., Mamm. p. 15.

Blanford states there is in the British Museum a specimen, very probably of this species, from the Laos country in Upper Siam.

*Distribution.* Eastern Himalayas, Assam, Upper Burma, Siam probably), Sandarbuns (?)

6. *MACACUS ARCTOIDES* Is. Geoffr. The Brown Stump-tailed Monkey.

*Macacus arctoides*, Blanf. Faun. Ind., Mamm. p. 17.

*Siamese*. "Ling sayn."

There is a stuffed specimen in the Siamese Museum, of unknown locality.

*Distribution*. "Moupin in N.W. China, living on the snow-clad mountains; Upper Burma (Bhamo); Siam; the Cachar and Kachin hill-region on the western frontier of the Province of Yunnan, China; North-west Borneo, on the mainland opposite Labuan." (Forbes, 'Handbook Primates,' ii. p. 8.)

7. *MACACUS RUFESCENS* Anderson. The Rufous Stump-tailed Monkey.

*Distribution*. "Malay Peninsula."

In Bangkok I saw a live monkey, said to have been caught in the Laos country, which may have been *M. rufescens* or a variety of *M. arctoides*; the general colour of its hair was a conspicuous yellow, the face brilliant red. It was a very large and powerfully built male: its ferocity prevented a closer examination.

There is a short-tailed monkey called by the Siamese "Ling kabut." I did not succeed in finding out what it is: but villagers on the Bangpakong River, to whom I showed some pictures of animals, pointed out the figure of *Macacus leoninus* on p. 19 of Blanford's Indian Mammals as the "Ling kabut."

N.B.—*Macacus leoninus* (Blyth). Blanford, Faun. Ind., Mamm. p. 20, says that Anderson has referred to this species a young animal from Perak, but that the identification was very questionable.<sup>1</sup>

*Distribution*. Burma, Andamans (introduced), Siam (?).

8. *MACACUS NEMESTRINUS* (Linn.). The Pig-tailed Monkey.

*Papio nemestrinus*, Cantor, p. 6.

*Macacus nemestrinus*, Blanf. Faun. Ind., Mamm. p. 20.

"Berok" (pronounced "Broh") of the Malays.

"Broh" or "Coco-nut Monkey" of the English in the Straits Settlements.

Cantor says the Broh is found in Penang and on the Peninsula; Ridley (Mamm. Malay Pen. p. 26) says it "is not really wild in Singapore, but it is frequently kept in captivity, and, often escaping, remains in a half-wild state, usually near the town. It is common in the Peninsula in the denser jungles." Ridley also records this species from Pahang (J. S. B. R. A. S. 1894, no. 25, p. 57). Kelsall records it from Gunong Janeng, Johore (J. S. B. R. A. S. 1894, no. 26, p. 16). In the Museum at Taiping there are several

<sup>1</sup> Selater (P. Z. S. 1898, p. 280) mentions a fine adult male *Macacus leoninus* living in the Marseilles Zoological Gardens, which is stated to have been brought from Siam.

specimens from Larut, Perak. In the Museum at Kuala Lumpor there are two specimens from Selangor.

I have never met with this monkey in a wild state, but it is very commonly to be seen in captivity in the Straits Settlements. The young are said to be intelligent. Three adult males I had alive were inclined to be savage; their strength compared to their size was extraordinary, and they were very destructive, requiring strongly built cages to keep them in.

*Distribution.* Southern Burma, Tenasserim, Malay Peninsula, Sumatra, Banka, Java, Borneo.

In the Museum at Singapore is a nearly mature embryo, a cross between a male *Macacus nemestrinus* and a female *Cynopithecus niger*, which paired in the Singapore Gardens (Rep. Raffles Libr. & Mus. 1896, p. 5).

#### 9. *MACACUS CYNOMOLGUS* (Schreb.). Macaque or Crab-eating Monkey.

*Cercopithecus cynomolgus*, Cantor, p. 6.

*Macacus cynomolgus*, Blanf. Faun. Ind., Mamm. p. 21; Ridley, Mamm. Malay Pen. p. 24.

"Kra" of the English in the Straits Settlements and of the Malays. *Siamese*. "Ling."

*Localities.* The Kra or Mangrove Monkey is *par excellence* "the common monkey" of the Malay Peninsula; personally I have seen them wild in Penang (up to 2000 feet elevation), in Kedah and in Singapore (Sungei Pandang, Blaken Mati, Botanical Gardens, and Bukit Timah). In the Museum at Taiping are several specimens from the Larut and Kinta districts of Perak. Ridley (J.S.B.R.A.S. 1894, no. 25, p. 57) records it from Pahang, stating that it is "common along the coast and for some distance up the rivers." Kelsall (J. S. B. R. A. S. 1894, no. 26, p. 16) records it from Johore, in almost similar words: "common in the low lands near the coast and up the rivers for a considerable distance."

In the Siamese Museum there is a stuffed specimen labelled "Siam." I have not unfrequently seen these monkeys on house-tops and in trees in Bangkok, but believe they were all individuals escaped from captivity. In 1898 there was a white Kra, an extremely pretty monkey, living in the King's garden at Bangkok.

*Habits.* When travelling on the Malay rivers one generally sees the Kras in small parties of from 2 to 10 among the tree-branches at high tide, but at low water they take to the mud and hunt about for food. They usually take little notice of passing boats, and so can be easily observed. In captivity they become intelligent pets; though the adult male Broh becomes fierce and dangerous, I have known a very large male Kra to be remarkably tame. They delight in water, and (at any rate in their native climate) should be allowed a bath at least once a day.

Ridley (Mamm. Malay Pen. p. 26) says, "I have seen one leaping off the boughs of a tree into the water, climbing up and leaping off again and again." And I was told of one kept by some English

soldiers at Singapore that would dive into a deep tub of water and fetch out bananas that were thrown in for it.

The males of this species (as well as some other *Macaci*) seem to vary much in the size to which they attain.

*Distribution.* Burma, Nicobar Islands, Siam, Malay Peninsula, Sumatra, Pulo Nias, Banka, Java, Babi, Lombok, Timor, Natuna Islands, Borneo, Celebes (?), and the Philippines.

The Monkeys of the genus *Semnopithecus* are called by the Malays "Lutong," and by the Siamese "Ling karng"; of their species, varieties, and distribution in Siam and the Malay Peninsula we know but little, and their synonymy is very confusing, and must remain unsettled until much more material than is at present available has been collected. They seem very generally distributed throughout the big jungles both on the mountains and on the plains, but they are usually very shy. Cantor distinguished four species from the Peninsula, which he called *SS. obscurus*, *albocinereus*, *cristatus*, and *femoralis* respectively. Ridley says "there are several other species of *Semnopithecus* in the Malay Peninsula with apparently similar habits to *S. femoralis*, but it is not easy even to secure specimens, still less to observe their habits."

Personally I know of four distinct species from this region. Of three, *S. obscurus*, *S. femoralis*, and *S. germaini*, I have shot specimens, which Mr. Oldfield Thomas has kindly identified; the fourth I only know from three stuffed specimens in the Museum at Taiping, two of which are from the Piah River in Upper Perak, and one from Tapah, Batang Padang, also in the State of Perak. It is a large species with unusually long limbs and tail (even for a *Semnopithecus*), and is coloured light rufous brown above and lemon-yellow below; the hair on the forehead, hands, feet, and tail is dark brown. Mr. Wray has labelled these specimens *S. siamensis*.

The Lutongs are but rarely seen in captivity, and are usually short-lived in that state, although it is possible to keep them. In June 1897, Mr. A. H. B. Dennys wrote to me from Penang saying, "There is a very fine adult tame lutong here, a black one, which has been in captivity over three years, but I think it is a rare thing to get them tamed."

The Siamese believe these monkeys eat human flesh, and are greatly afraid of them. They say if you sleep out in the jungle they will kill you by sucking your blood.

#### 10. SEMNOPITHECUS OBSCURUS Reid. The Dusky Leaf-Monkey.

*Semnopithecus obscurus*, Blanf. Faun. Ind., Mamm. p. 41.

"Lutong etam" (etam = black) of the Malays of the Peninsula. Cantor (p. 4) says this is the most common species in Penang and Singapore, and that it also occurs on the Peninsula. It is doubtful, however, whether it does occur at Singapore at the present time.

In April 1895 I found this species very common in Kedah, living in the highest trees along the banks of the Kedah River and

its tributaries, either solitary or in parties of about half a dozen; they were very active and wild.

In the Botanical Gardens, Penang, I have seen this species playing in the trees. On Penang Hill I have occasionally seen Lutongs which appeared to belong to this species; they are very shy, and it is difficult to see much of them before they disappear among the jungle trees.

In the Museum at Taiping there are specimens from the Larut Hills, Perak. In April 1898, at about 3500 feet elevation in the Larut Hills, I came on a party of from 10 to 20 *Semnopithecus*, of this or a closely allied species.

Ridley (J. S. B. R. A. S. 1894, no. 25, p. 57) says: "*S. obscurus*, Reid. The Grey Lotong. This monkey, which is common in Pahang, varies much in colour. Here it is of a dark grey, while further south, in Johore, it is almost black."

Kelsall (J. S. B. R. A. S. 1894, no. 26, p. 16) says: "*S. obscurus*, Reid. The Dusky Lotong. This species is very nearly black in Johore. Several specimens were obtained. Common everywhere in the inland districts."

There are two stuffed specimens in the Siamese Museum, labelled "Siam."

*Colour.* Specimens from Kedah. The very handsome fur is darkish grey above, paler below, with hands and feet black. The face is black except for the white nose and the distinctly defined white spaces or rings round the eyes. Iris brown.

*Size.* Specimens from Kedah:—

♂. Head and body  $21\frac{1}{2}$  in. (or 546 mm.); tail  $26\frac{3}{4}$  in. (or 679 mm.).

♀. Head and body  $22\frac{1}{2}$  in. (or 571 mm.); tail 27 in. (or 685 mm.).

*Distribution.* Siam, Tenasserim, Malay Peninsula.

11. *SEMNOPITHECUS FEMORALIS* Horsf. The Banded Leaf-Monkey.

*Semnopithecus femoralis*, Blanf. Faun. Ind., Mamm. p. 42.

Cantor (p. 5) apparently obtained only one specimen—from Purlis (a small State on the west coast of the Malay Peninsula, north of Kedah), and says that the species does not appear to occur in either Penang or Singapore. Ridley (Mamm. Malay Pen. p. 26), however, says "it is not very common in Singapore, but a few occur in most of the larger jungles." Mr. Oldfield Thomas (P. Z. S. 1886, p. 72) mentions a specimen from Klang, Selangor, collected by Mr. Davison.

In September 1897, in the woods among the foothills of Gunong Pulai, Johore, were many Lutongs of this species going about in flocks; they were shy and difficult to see except for a glimpse of a black form disappearing from one high tree to another.

In the Museum at Taiping there are several stuffed monkeys which I feel inclined to refer to this species. Some from the Larut Hills are labelled by Mr. Wray *S. cristatus*, Horsf. & Raffl.,

and some from Tapah, Batang Padang, are labelled *S. albocinereus*, Schinz, or "Ka Ka."

*Colour.* Specimens from Johore. The beautifully soft fur is very dark grey, practically black, except on the chin and breast, where it is lighter, and on the inner side of the forearms, where it is light grey, and on the belly and inner side of the hind legs, where it is white. On the inner side of the thighs the two colours do not gradually blend, but there is a sharp line of demarcation between the black and white. The eyelids are whitish, the skin round the mouth pinkish, the rest of the naked face grey. The naked skin of the hands, feet, and callosities is dark grey.

*Size.* Specimens from Johore:—

♀. Head and body 21 in. (or 536 mm.); tail (with end hair)  $26\frac{1}{4}$  in. (or 669 mm.).

♀. Head and body  $21\frac{1}{2}$  in. (or 546 mm.); tail (with end hair) 27 in. (or 688 mm.).

*Distribution.* Tenasserim, Malay Peninsula, Sumatra, and Borneo.

N.B.—*Semnopithecus neglectus*, Schlegel, founded on a specimen from Singapore, is probably a variety of *S. femoralis*.

## 12. SEMNOPITHECUS MAURUS (Schreb.). The Negro Monkey.

? *Semnopithecus cristatus*, Cantor, p. 5.

*Distribution.* Cantor gives the habitat of his *S. cristatus* as "Pinang, Malayan Peninsula, Sumatra, Borneo, Banka."

H. O. Forbes, 'Handbook of Primates,' ii. p. 126, gives the distribution of *S. maurus* as "Malay Peninsula, Sumatra, Java, Billiton, Borneo."

## 13. SEMNOPITHECUS MITRATUS (Eschscholtz). The Mitred Leaf-Monkey.

? *Semnopithecus albocinereus*, Cantor, op. cit. p. 4.

*Distribution.* "Siam, Malay Peninsula, Sumatra." (Forbes, 'Handbook of Primates,' ii. p. 139.)

Mr. Oldfield Thomas (P. Z. S. 1896, p. 72) mentions a specimen of *Semnopithecus siamensis* Müll. & Schl., "from the interior of the Malay Peninsula, beyond Klang," collected by Mr. Davison, and says of it: "A curious whitish specimen, far paler than usual, but apparently not specifically different from Cantor's specimens of *S. albocinereus*, which Dr. Anderson has shown to be identical with *S. siamensis*."

## 14. SEMNOPITHECUS GERMAINI Milne-Edwards. Germain's Leaf-Monkey.

When on the Bangpakong River in Siam, in March 1897, we from time to time saw flocks of from 10 to 20 monkeys of this species in high trees in patches of jungle. The skin of the face is entirely black, the iris dark brown. A male I shot near Tahkamen measured:—Head and body  $23\frac{1}{2}$  in. (or 587 mm.); tail, with end hair 33 in. (or 838 mm.), without end hair  $31\frac{1}{2}$  in. (or 800 mm.).

On April 1st, 1897, I bought from a Siamese at Tahkamen a young monkey apparently of this species: it was evidently very young, and was weak and feeble. We tried feeding it at first with a bit of cotton-wool soaked in tinned milk and water (fresh milk was not to be had), but soon a young Siamese woman offered to suckle it, and she fed it with her own milk till we left Tahkamen on the 5th of April; then we had to feed the monkey on tinned milk and mashed bananas. It thrived very well; in a few weeks it could feed itself on a mess of banana, rice, porridge, and milk, and when we had had it about six weeks it took to eating a little grass on the lawn every day. It grew stronger and very active and was very fond of us (though it screamed at strangers and would not be touched by them); it also enjoyed romps with a Siamese kitten, and the two little animals would sleep curled up together—the monkey grasping the kitten's fur in its hands. When playing about and extra pleased this monkey had a comic little habit of jumping in the air vertically and coming down again on all fours. Its senses of sight and hearing were particularly acute, and it would follow my wife or myself about the house and compound.

Dimensions on April 1st:—Head and body 10 in. (or 254 mm.); tail (with end hair)  $13\frac{1}{2}$  in. (or 343 mm.).

For two months this little animal was as well, happy, and active as could be; then it got a sudden attack of diarrhœa and a bad cold in the head, and, in spite of careful nursing, died on June 4th, 1897. Its dimensions then were:—

Head and body 11 in. (or 279 mm.); tail, with end hair  $13\frac{3}{4}$  in. (or 350 mm.), without end hair  $12\frac{3}{4}$  in. (or 324 mm.).

*Colour.* (Noted from life on 1.4.97.) Fur bright gold all over, except the long hair on the forehead, which is dark grey, and the hands and feet, which are also dark grey, and the hair on the cheeks and chin, which is white. Skin of face and ears dark brown. Iris dark brown. The skin of the abdomen and inner side of limbs is white, sparsely covered with golden fur.

*Colour* (of same individual, noted immediately after death, 5.6.97). Hair on forehead, crown, back of head, and neck black mixed with silvery grey. Lips, chin, long whiskers, and sides of head (both in front and behind ears) pure silvery white. Body, tail, and limbs golden orange, mixed with silvery and dark grey hairs, especially dark grey on the lumbar region, base of tail, forearm, and lower leg; the hinder portion of the forearm is almost entirely black, as is the hair on the hands and feet, but there are some silver hairs on the fingers, many on the toes, and many golden hairs on the "instep" of the hind feet. Naked skin of face, ears, hands, and feet entirely black. Iris dark brown. Callosities pale flesh-colour.

The hair of the crown does not radiate, but is directed backwards, forming a pointed crest over the occiput. Black supraorbital hairs well-developed, whiskers long, beard short.

*Distribution.* CochinChina, Siam.

In the Siamese Museum there was also a stuffed Lutong I never

identified, labelled "Siam;" it measured, head and body  $24\frac{1}{2}$  in. (or 622 mm.); tail  $31\frac{1}{2}$  in. (800 mm.). Mr. A. Balfour, Chief Engineer of the Siamese Navy, kindly gave me three skulls of *Semnopithecus* which he had shot near Ratburee, Siam; unfortunately I never had a chance of comparing them with skulls of known species, but they are still (or ought to be) in the Museum at Bangkok.

### Family LEMURIDÆ.

#### 15. NYCTICEBUS TARDIGRADUS (L.). The Slow Loris.

*Nycticebus tardigradus*, Blanford, Faun. Ind., Mamm. p. 44.

"Kú kang," "Kong kang," and "Kongka" of the Malays.

"Lemur" of the English in the Straits Settlements.

Siamese. Ling-lom = "Wind Monkey."

In Penang I got numerous specimens from natives, who said they had caught them in the hill forests; I also got two individuals in Kedah. In the Museum at Taiping there are many specimens from Larut, Perak; these resemble in head-markings and colour Penang specimens of the variety *javanicus*. In the Museum at Kuala Lumpur are two specimens, probably caught in Selangor. Mr. Oldfield Thomas (P. Z. S. 1886, p. 73) has recorded a specimen collected at "Salanga, Junkceylon," by Mr. J. Darling, and one from Malacca collected by Mr. Davison. Ridley records this animal from Pahang (J. S. B. R. A. S. 1894, no. 25, p. 57) and from Singapore (Mamm. Malay Pen. p. 26).<sup>1</sup> There are three Siamese specimens in the Museum at Bangkok.

*Colour* (of a Siamese specimen). Head, neck, lower parts and inner side of the limbs, lower parts of the fore limbs, and hands and feet very pale silvery grey, almost white. Remainder of fur light rufous brown, intermingled with many silver hairs. A bright reddish-brown vertebral line, which gets narrower anteriorly and terminates on the forehead (and does not join the ear-patches or the eyes as it does in eight specimens obtained in Penang). The patch round each ear is light reddish brown.

*Size* (of Siamese specimen noted above). ♂. Head and body  $14\frac{3}{4}$  in. (or 375 mm.); tail (without end hair)  $\frac{3}{4}$  in. (or 20 mm.).

*Habits*. In captivity these animals will live on bananas, mangoes, bread and milk, and live small birds, which they are singularly adroit at catching. At night, if left to themselves, they depart from their usual deliberate ways and climb about with considerable speed and activity. At one time I used to sleep in a hammock slung in a veranda close to a cage of Kongkangs, and when lying awake on moonlight nights had good opportunities of observing their habits. They could squeeze through the bars of the cage (though I never made out how they got their bodies through such narrow openings as they were) and roam about; usually they were back in the cage by daylight, sometimes they remained absent

<sup>1</sup> Three of the specimens on which M. Alphonse Milne-Edwards founded *Nycticebus cinereus* (Nouvelles Archives du Muséum, iii. 1867, p. 9, pl. iii.) were "pris aux environs de Bangkok."

a day or two, and on one occasion two individuals never returned to me. One kept by itself makes a nice and interesting pet, but when there were more than one I found they would resent being handled and bite; their bite may be very severe, as I know from painful experience, but the stories of its being dangerously poisonous to human beings are hard to believe. The young are carried under the mother's belly, holding on tight by all four hands, until they almost equal her in size.

*Popular Beliefs.* Many strange powers are attributed to this animal by the natives of the countries it inhabits; there is hardly an event in life to man, woman, or child, or even domestic animals, that may not be influenced for better or for worse by the Slow Loris, alive or dead, or by any separate part of it, and apparently one cannot usually tell at the time that one is under its supernatural power! Thus a Malay may commit a crime he did not premeditate, and then find that an enemy had buried a particular part of a Loris under his threshold, which had, unknown to him, compelled him to act to his own disadvantage. Its fur is used to cure wounds, and a sailing ship with a live Loris on board is said never to be becalmed. But its life is not a happy one, for it is continually seeing ghosts: that is why it hides its face in its hands!

A full account of the folk-lore connected with the Slow Loris would fill a small volume, but it would be of much interest. I am very glad to hear that Mr. H. N. Ridley is collecting stories about it from old Malay writings.

*Distribution.* Eastern Bengal, Assam, Burma, Siam, Cochinchina, Malay Peninsula, Sumatra, Java, Borneo, Philippines.

## Order CARNIVORA.

### Family FELIDÆ.

#### 16. *FELIS TIGRIS* L. The Tiger.

*Felis tigris*, Blanf. Faun. Ind., Mamm. p. 58.

*Siamese.* "Seu-a."

Malay names for different varieties of tigers, Cantor, p. 35 (*apud* Low):—

1. "Rimau Sipai," reddish-coated, striped.
  2. "Rimau Ballu," darker coloured.
  3. "Daun Pinang," reddish-coated, without stripes.
  4. "Tuppu Kasau," darkish, without stripes, but with longer hairs than the others.
  5. "Puntong Prun," very dark, striped.
- "Rimau" is the common word for tiger; Cantor also gives "Harimau."

The tiger is numerous in suitable localities in the Malay Peninsula, and the island of Singapore, but seems to be entirely absent from Penang. In Kedah I was told no tigers inhabit the flat country around Alor Star, but are found in the hills; writing of the tiger in Pahang, however, Ridley (J. S. B. R. A. S. 1894,

no. 25, p. 57) says it "appears to be widely distributed, especially in the low country, disappearing in the hills." In Perak tigers occur from sea-level to the mountain jungles; Wray (J. S. B. R. A. S. 1890, no. 21, pp. 129, 138, 146) mentions them in the Larut Hills at over 4000 feet, and in the Batang Padang mountains at 6700 feet above sea-level. Round the town of Taiping, the capital of Perak, tigers are particularly numerous, living largely on the pigs kept by the Chinese. I have seen, a few hours after the occurrence, where a tiger burst through the wall of a house and carried off a pig, to the horror of a Chinaman who was in the room at the time. In Selangor also the tiger is over-plentiful. Kelsall (J. S. B. R. A. S. 1894, no. 26, p. 16) says they are "reported to be plentiful everywhere (in the State of Johore), especially on the Indau and at Batu Pahat." Dr. Wilson (Principal Medical Officer, Johore) informed me that about 1889 a tiger was caught at Muar which measured 12 feet from nose to tip of tail.

In Siam the tiger apparently is not found in the delta of the Menam, near Bangkok, nor in the valley of the Bangpakong, but from all accounts they are numerous in the Dong Phya Fai, especially at Pakchom on the Korat side.

*Habits.* Some idea of the Malay tiger and its ways may be gathered from the following well-written accounts:—

A. R. Wallace, 'Malay Archipelago,' p. 18 (1869).

H. N. Ridley, "Mammals Malay Peninsula," Nat. Science, vol. vi. pp. 89-91 (1895).

F. A. Swettenham, 'Malay Sketches,' pp. 12-18 (1896).

H. Clifford, 'East Coast Etchings,' pp. 142-154 (1896).

*Distribution.* Central and South-eastern Continental Asia and Sumatra and Java.

## 17. *FELIS PARDUS* L. The Leopard or Panther.

*Felis leopardus*, Cantor, p. 35.

*Felis pardus*, Blanf. Faun. Ind., Mamm. p. 67; Ridley, Mamm. Malay Pen., Nat. Science, vol. vi. 1895, p. 91.

Spotted Variety: "Rímau bintang" (Starred Tiger) of the Malays.

Black Variety:

"Rímau kúmbang" (Black-beetle Tiger) of the Malays.

"Rímau akar" (Tiger of the Lianas) according to Ridley.

Cantor says: "The leopards of the Malayan Peninsula appear to attain to a larger size, and to be more ferocious, than is generally the case in India. Instances of their having killed and carried off Malays are on record." Ridley, on the other hand, states: "It is quite harmless to man unless wounded. . . . The more slender form, commonly called the leopard in opposition to the short thick panther, is said to occur in the Peninsula;" and also (J. S. B. R. A. S. 1894, no. 25, p. 57): "There are two distinct forms, one, which includes the black panther, being much more thick-set and heavy-looking than the typical leopard, and the spots are usually rings and not rosettes as in that animal."

*Localities :—*

*Siam.* The spotted leopard occurs ; while I was at the Museum in Bangkok two specimens were brought there in the flesh to be skinned, but neither had any history. Mr. St. Stephen, Manager of the Bawtong Mines, Kabin, told me he had once seen a panther near the mines.

*Kedah.* Both the spotted and black varieties occur—the latter appears to be most numerous—and are often trapped and exported to Penang, and thence sent to menageries in Europe and America.

*Penang.* So far as I can ascertain, there are no wild leopards on the island, but individuals from Kedah have occasionally escaped of late years to my knowledge ; one attacked and wounded a native policeman on duty in Georgetown about 1896.

*Province Wellesley.* An English Officer of Police told me he had shot a black panther in the Province about 1896.

*Perak.* In the Museum at Taiping there is a spotted leopard from Larut, and black ones from Larut and from Kuala Kangsar. Ridley says the spotted form “appears to be fairly common in Perak and the northern part of the Peninsula.”

*Selangor.* Mr. A. L. Butler, Curator of the Museum at Kuala Lumpur, tells me 99 per cent. of the leopards in Selangor are black. Personally I have not heard of a spotted one from any State south of Perak.

*Pahang.* Occurrence recorded by Ridley (J. S. B. R. A. S. 1894, no. 25, p. 57).

*Malacca.* Cantor records a black male killed at Malacca, which “measured from the nose to the root of the tail 4 ft. 4½ in. (about 1333 mm.), the tail 2 ft. 10½ in. (about 886 mm.).”

*Johore.* Ridley says : “The Black Panther is abundant in Johore, and formerly occurred in Pulau Ubin, between Singapore and Johore.”

*Singapore.* Ridley says the Black Panther “is said to have occurred in Singapore, but this appears doubtful.”

*Distribution.* Africa and Asia in suitable places.

# 18. FELIS NEBULOSA Griffith. The Clouded Leopard.

*Felis nebulosa*, Blanf. Faun. Ind., Mamm. p. 72.

“Clouded Tiger” of the English in Siam.

This beautiful animal must be very rare in the Malay Peninsula ; and in Siam but little is known of it, except the handsome skins which are sometimes brought by natives from upcountry to be sold in Bangkok.

*Distribution.* South-eastern Himalayas, Assam, Burma, Siam, Malay Peninsula, Sumatra, Java, Borneo, and Formosa (*apud* Blanford).

Dr. Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 7) says he obtained “from a native a full-grown specimen of *Felis nebulosa* (body 36 in., tail 30 in.), said to have been killed at Changi, near Singapore.”

19. *FELIS MARMORATA* Martin. The Marbled Cat.

*Felis marmorata*, Blanf. Faun. Ind., Mamm. p. 74.

"Rimau dahan" of the Malays, according to Cantor and L. Wray.

Cantor (p. 36) records this species as numerous in the Malay Peninsula. In the Museum at Taiping there are two specimens from Kuala Kangsar, Perak. In the Museum at Kuala Lumpur there is a specimen caught at about 5 miles from that town.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 222) records two specimens from Malacca obtained in 1845.

Dr. Hanitsch (Rep. Raffles L. & M. 1898, p. 9) mentions a specimen of "*Felis marmorata* (= *diardi*)" from Malacca.

*Distribution.* Sikhim, Assam, Burma, Malay Peninsula, Sumatra, Java; Borneo (?).

20. *FELIS TEMMINCKI* Vig. & Horsf. The Golden Cat.

*Felis temmincki*, Blanf. Faun. Ind., Mamm. p. 75.

"Rimau Anjing" (Dog-cat) of the Malays of Perak, according to Mr. L. Wray.

In the Museum at Taiping there is a fine male from Kuala Kangsar, Perak; as stuffed it measures:—

Head and body 34 in. (or 854 mm.); tail 17 in. (or 432 mm.).

In the Museum at Kuala Lumpur there is one shot at Serendah, about 22 miles from Kuala Lumpur.

In the Museum at Singapore is a specimen from Malacca.

Ridley (Mamm. Malay Pen. p. 92) mentions this cat from Pahang.

*Distribution.* Nepal, Sikhim, Tenasserim, Malay Peninsula, Sumatra, Borneo.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 222) records a specimen from Malacca obtained in 1867.

21. *FELIS VIVERRINA* Benn. The Fishing Cat.

*Felis viverrina*, Blanf. Faun. Ind., Mamm. p. 76.

*Siamese.* Seu-a-pla = "Fish-cat."

This animal seems very well known in Siam; there were specimens of it in the Siamese Museum, but without exact locality. In March 1897, in the open country between Paknam Kabin and Bawtong Kabin I saw by a pond footprints of a large cat, probably of this species. In Jan. 1898 I saw a skin in a bazaar at Chantaboon.

*Distribution.* Parts of India, Ceylon, Burma, Siam, and Southern China. Mr. Blanford also gives the Malay Peninsula.

22. *FELIS BENGALENSIS* Kerr. The Leopard Cat.

*Felis javanensis*, Cantor, p. 36.

*Felis bengalensis*, Blanf. Faun. Ind., Mamm. p. 78.

"Rimau akar" of the Malays of the Peninsula, according to Cantor.

"Rimau aker" of the Malays of Perak, according to L. Wray.  
 "Seua-bong" and "Mow-pa" of the Siamese.

Cantor records this species from Penang and the Peninsula. Ridley (Nat. Science, vol. vi. 1895, p. 92) says this is "the commonest wild cat. . . . I have seen it in Singapore, and it appears to be abundant in the Peninsula."

In the Museum at Taiping there are many specimens from Larut, Perak; and I was told it was common in the State of Selangor. In the Museum at Bangkok there are specimens from Pachim, Siam.

A wild cat caught near Balik-Pulo, Penang, in the spring of 1896 was, to the best of my recollection, of this species.

*Distribution.* India, Assam, Burma, Southern China, Siam, Malay Peninsula, Sumatra, Java, Borneo, and the Philippines.

### 23. FELIS PLANICEPS Vig. & Horsf. The Flat-headed Cat.

*Felis planiceps*, Blauf. Faun. Ind., Mamm. p. 83.

"Jalang" of the Malays of the Peninsula, according to Cantor.

Cantor also gives "Kúching útan" as the Malay name of this species, but this simply means "Cat of the woods" and is applied to any wild cat.

Cantor (p. 37) says of this apparently not numerous species that it is found on the Malay Peninsula and is "of most ferocious habits and untamable."

In the Museum at Taiping there is a specimen said to have been obtained in Selangor.

In the Museum at Kuala Lumpur are two specimens, one from Klang, and the other from some other locality in the State of Selangor.

W. L. Slater (Cat. Mamm. Indian Mus. ii. 1891, p. 222) records a specimen from Malacca obtained in 1846.

*Distribution.* Malay Peninsula, Sumatra, Borneo.

### 24. FELIS CHAUS Güld. The Jungle Cat.

*Felis chaus*, Blauf. Faun. Ind., Mamm. p. 86.

In the Siamese Museum there is an old stuffed cat apparently of this species, labelled "Siam: January 1894."

*Distribution.* Northern Africa, Western Asia, India, Ceylon, Burma, and perhaps Siam.

N.B.—Ridley (Nat. Science, vol. vi. 1895, p. 92) says "*Felis tristis* has been taken in Malacca." Slater (P. Z. S. 1898, p. 281) mentions a beautiful small wild cat from Siam, living in the Jardin Zoologique d'Acclimatation, Paris, which was quite new to him.

### 25. FELIS DOMESTICA Briss. The Common Cat.

"Kúching" of the Malays.

"Mow" of the Siamese.

The ordinary domestic cat of the Malays has a very short

twisted or knotted tail, or else a mere bob. In Johore I have seen a very remarkably coloured variety of cat, somewhat like the English "tortoise-shell," but the different colours arranged more in spots than in blotches. The "Siamese" cat is fairly common in Siam, and not "reserved for royalty" (Lydekker, Royal Nat. Hist. i. p. 429, line 7). In Bangkok and the Straits Settlements it is not so much prized as a domestic pet as is the somewhat similar, but darker coloured, "Laos" cat from Northern Siam. In this region as elsewhere cats "frequently relapse from a state of domestication, resort to the jungle, and shun the presence of man" (Cantor, p. 38).

### Family VIVERRIDÆ.

#### Subfamily VIVERRINÆ.

#### 26. *VIVERRA ZIBETHA* L. The Large Indian Civet.

*Viverra zibetha*, Blanf. Faun. Ind., Mamm. p. 96.

"Tanggallong" of the Malays of the Peninsula (according to Cantor).

"Musang jebat" of the Malays of Perak (according to L. Wray).

Cantor (p. 27) records this species from Penang, Singapore, and the Peninsula, and considers it to be "far less numerous than the following" (i. e. *V. megaspila*). In the Museum at Taiping there are many specimens from Larut, Perak. In the Museum at Kuala Lumpur there are two civets from Selangor which I referred to this species, but Mr. A. L. Butler tells me he thinks they are *V. megaspila*.

Ridley (Nat. Science, vol. vi. 1895, p. 93) says: "The larger civets *V. zibetha* and *V. tangalunga*, the 'Musang jebat,' do not, I believe, occur wild in Singapore, but are common in the Peninsula, and are often trapped and brought for sale. They are never at all docile, and seldom live long in captivity."

*Distribution.* Bengal, Assam, Burma, Southern China, Siam, Malay Peninsula.

#### 27. *VIVERRA MEGASPILA* Blyth. The Burmese Civet.

*Viverra tangalunga*, Cantor, p. 27.

*Viverra megaspila*, Blanf. Faun. Ind., Mamm. p. 99.

"Músang jebát" of the Malays.

Cantor records this species from Penang, Singapore, and the Peninsula, and says it is "exceedingly numerous." In the Museum at Taiping there are many specimens from Larut, Perak. In a deserted bungalow at Dumdruan, Gunong Pulai, Johore, I found a skin of this civet. The skin measured:—Head and body 29 in. (or 737 mm.); tail  $11\frac{1}{2}$  in. (or 292 mm.).

*Distribution.* Burma, Cochinchina, Malay Peninsula, Sumatra.

28. *VIVERRICULA MALACCENSIS* (Gmel.). The Small Indian Civet.

*Viverricula malaccensis*, Blanf. Faun. Ind., Mamm. p. 100.

"Cha-moot" of the Siamese.

There were in the Museum at Bangkok five specimens from Siam.

Cantor (p. 29) says: "On the Malayan Peninsula this species appears to be more numerous than *V. zibetha*; less so than *V. tangalunga*" (i.e. *V. megaspila*).

Ridley (Nat. Science, vol. vi. 1895, p. 92) gives a long and interesting account of "*Fiverra malaccensis*, the Musang"; with all due deference to his knowledge and experience, I would suggest that he is referring to (or at any rate has included under that name) some species of *Paradoxurus*.

Mr. J. L. Bonhote (A. & M. N. H. 7th series, vol. i. p. 120, 1898) writes: "Specimens from the Malay Peninsula representing the original *V. malaccensis* may be distinguished by having only seven dark rings on the tail instead of eight as in all other specimens, the tip being pure white."

*Distribution.* India, Ceylon, Assam, Burma, Southern China, Siam, Malay Peninsula, Java, Philippines, Socotra, Comoro Islands, Madagascar (probably introduced).

29. *PRIONODON GRACILIS* Horsfield. The Graceful Tiger-Civet.

Cantor (*op. cit.* p. 29) records this species from Malacca; of which Blanford (Faun. Ind., Mamm. p. 105) says: "It was also reported from Malacca by Cantor (J. A. S. B. xv. p. 199); but, judging by the dimensions given, it is not improbable that the species obtained by him was *P. maculosus*."

In the Museum at Taiping are three stuffed Tiger-civets from Larut, Perak: they agree in size and description with *P. pardicolor* (Blanf. Faun. Ind., Mamm. p. 103), but the spots tend to form broad longitudinal bands. In the Museum at Kuala Lumpur there is a Tiger-civet from Selangor, taken at about 5 miles from Kuala Lumpur: it seemed to me to be of the same species as the specimens at Taiping.

*Distribution.* Malay Peninsula, Sumatra, Banka, Borneo, Java.

30. *PARADOXURUS NIGER* (Desm.). The Indian Palm-Civet.

*Pardoxurus niger*, Blanf. Faun. Ind., Mamm. p. 106.

I include this species as an inhabitant of the Malay Peninsula on account of two specimens.

1st. One in the Museum at Taiping from Larut, Perak. It is very dark in colour, has no pale band on forehead, and the end of the tail white. It is labelled by Mr. Wray "*P. macrodus*, Gray."

2nd. One that I saw in Penang was taken alive to England and presented to this Society: it was identified in London as *P. niger*.

*Distribution.* India, Ceylon, and (apparently) the Malay Peninsula.

31. *PARADOXURUS HERMAPHRODITUS* (Pall.). The Malay Palm-Civet.

*Paradoxurus musanga*, Cantor, p. 31.

*Paradoxurus finlaysonii*, Horsfield, Cat. Mamm. Mus. East-India Co. 1851, p. 65.

*Paradoxurus hermaphroditus*, Blanf. Faun. Ind., Mamm. p. 108.

"Músang" of the Malays, and the English in the Straits Settlements, also "Músang Pándan" and (when the tail is with white point) "Músang Búngkwang," Cantor. "Hen" of the Siamese.

Mr. Oldfield Thomas (P. Z. S. 1886, p. 73) records this species from Salanga (Jnnkceylon), and Klang (Selangor).

This Civet is abundant in the Malay Peninsula; personally I know of it from Kedah, Penang, Perak (many specimens from Larut in the Taiping Museum) Selangor, Malacca (specimens in Raffles Museum), Johore and Singapore. Sometimes it frequents inhabited houses, even in populous towns, but on account of its nocturnal habits is seldom seen.

Ridley's account (Nat. Science vol. vi. 1895, p. 92) of "*Viverra malaccensis*" applies excellently to this species.

*Size.* Adults seem to vary much in size. Cantor (p. 32) mentions one: head and body  $24\frac{1}{2}$  in. (or 622 mm.); tail  $16\frac{1}{2}$  in. (or 420 mm.).

*Distribution.* Burma, Siam, Malay Peninsula, Sumatra, Java, Borneo.

32. *PARADOXURUS MACRODUS* Gray. The Large-toothed Palm-Civet.

*Paradoxurus macrodus*, W. L. Sclater, Cat. Mamm. Indian Mus. ii. 1891, p. 246.

"In external characters this species does not differ appreciably from *Paradoxurus hermaphroditus*, but the skulls are at once distinguished by the large size of the teeth; upper sectorial .39 inch long by .33 inch wide" (Sclater, *op. cit.* p. 243).

*Distribution.* Malay Peninsula.

33. *PARADOXURUS LEUCOMYSTAX* Gray. The White-whiskered Palm-Civet.

*Paguma leucomystax*, Cantor, p. 30.

"Músang búlan" of the Malays of the Peninsula (according to Cantor).

In the Museum at Taiping there are several specimens from Larut, Perak. A male stuffed measures:—Head and body 27 in. (or 686 mm.); tail  $21\frac{1}{2}$  in. (or 546 mm.).

In the Museum at Kuala Lumpor there is a single specimen. This species is said to be rare in Selangor.

In the Raffles Museum there are specimens from Singapore and Malacca.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 248) records specimens from Malacca.

*Distribution.* Malay Peninsula, Sumatra, Borneo.

34. *ARCTOGALE LEUCOTIS* (Blyth). The Small-toothed Palm-Civet.

*Paguma trivirgata*, Cantor, p. 31.

*Arctogale leucotis*, Blanf. Faun. Ind., Mamm. p. 115.

"Músang ákar" of the Malays of the Peninsula (according to Cantor).

"Hen-mi" of the Siamese.

In the Siamese Museum there is a male stuffed, obtained in the Dong Phya Fai by the late Dr. E. Haase.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. p. 242) records two specimens from Malacca.

Mr. Oldfield Thomas (P. Z. S. 1886, p. 73) mentions a specimen from Selangor, collected by Mr. Syers.

*Distribution.* Assam, Burma, Siam, Malay Peninsula, Sumatra, Java, Borneo.

35. *HEMIGALEA HARDWICKII* (Gray). The Zebra Civet-Cat.

*Paradoxurus derbyanus*, Cantor, p. 32.

*Hemigale hardwickei*, Blanf. Faun. Ind., Mamm. p. 117.

"Músang batu" and "Sángah Prao" of the Malays of the Peninsula (according to Cantor).

Cantor gives this species from the Malay Peninsula, and says it "is apparently not numerous, and is celebrated among the Malays for its great agility." Ridley (Nat. Science, vol. vi. 1895, p. 166) says: "The only person whom I have met with who has seen one wild is Mr. H. L. Kelsall, who found one under a log in thick jungle by the Tahan River in Pahang."

In the Museum at Taiping there are three stuffed specimens from Larut, Perak. In the Museum at Kuala Lumpur there is an example caught about 4 miles from that place. In the Raffles Museum is a specimen labelled "Malacca: 1892."

Mr. Oldfield Thomas (P. Z. S. 1886, p. 73) records a specimen from Jaffaria, Johore, collected by Mr. Davison.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 241) records a specimen from Malacca obtained in 1843.

*Distribution.* Malay Peninsula, Borneo.

36. *ARCTICTIS BINTURONG* (Raffl.). The Bear-Cat or Binturong.

*Arctictis binturong*, Cantor, p. 22; Blanf. Faun. Ind., Mamm. p. 118; Ridley, Nat. Science, vol. vi. 1895, p. 93.

"Unturong" of the Malays of the Peninsula (according to Cantor).

"Bintūrōng" or "Menūrōng" of the Malays (according to Ridley).

This delightful animal is apparently not uncommon on the mainland, but I have not heard of it occurring wild in Penang or Singapore. In the Museum at Taiping are specimens from Larut and Kuala Kangsar, Perak. It is represented in the Museum at

Kuala Lumpor, and is said to be common in Selangor. In the Raffles Museum is a specimen from Malacca.

Mr. Ridley has kept for some years a very fine male Binturong alive, chained to a tree in his garden at Singapore: it is not of a gentle disposition; but a full-grown female belonging to Mr. A. H. B. Dennys, of Penang, is perfectly tame and delights in being petted.

*Distribution.* Assam, Burma, Siam, Malay Peninsula, Sumatra, Banka, Java, Borneo.

### 37. CYNOGALE BENNETTI Gray. The Otter-Civet.

Cantor (p. 33) says: "This animal appears to be of rare occurrence on the Malayan Peninsula, and the natives are consequently not acquainted with it." In the Raffles Museum there is a stuffed animal, supposed to be of this species, labelled "Malacca: 1889."

*Distribution.* Malay Peninsula, Sumatra, Borneo.

### 38. HERPESTES AUROPUNCTATUS (Hodgs.). The Small Indian Mongoose.

*Herpestes auropunctatus*, Blanf. Faun. Ind., Mamm. p. 121.

Cantor (p. 34) obtained a single specimen in the Malay Peninsula, which Blanford says was "possibly introduced."

*Distribution.* South Persia, Afghanistan, Baluchistan, Northern India, Lower Bengal, Assam, Chittagong, Upper Burma, and (possibly) Malay Peninsula.

### 39. HERPESTES MUNGO (Gmel.). The Common Indian Mongoose.

*Herpestes griseus*, Cantor, p. 34.

*Herpestes mungo*, Blanf. Faun. Ind., Mamm. p. 123.

"Bambun" of the Malays (according to L. Wray).

Cantor (p. 34) obtained a single specimen in the Malay Peninsula, which Blanford says "may very probably have been imported."

In the Museum at Taiping there are two specimens unlabelled. In the Museum at Kuala Lumpor there is one caught 4 miles from that place. Once in 1895 I saw a wild Mongoose near "Alma" Estate in Province Wellesley which appeared to be of this species; but I have been told that at one time mongooses were imported from India by the planters and turned loose in the Province, but when, and how many, and on which estates I do not know.

*Distribution.* Afghanistan, India, Ceylon, Malay Peninsula; introduced in Jamaica and other West Indian islands.

### 40. HERPESTES URVA (Hodgs.). The Crab-eating Mongoose.

*Herpestes urva*, Blanf. Faun. Ind., Mamm. p. 129.

"Hen-paaraa" of the Siamese.

In the Siamese Museum is a stuffed specimen from Prachai, Siam.

*Distribution.* South-eastern Himalayas, Assam, Burma, South China, Siam.

41. *HERPESTES JAVANICUS* (Desm.). The Javan Mongoose.

Sometimes called "Paang-pawn" by the Siamese.

Cantor (p. 33) records this species as being numerous in Penang and on the Peninsula.

On the 20th Jan. 1898 I was given a live mongoose, supposed to have been caught in or near Bangkok, and probably on the west side of the Menam. As it was the only mongoose I had seen from the neighbourhood, and also belonged to a species I was not acquainted with, I was particularly interested to add it to my small private menagerie. It soon became a general favourite under the name of "Riki-tiki;" it was a very intelligent animal, but not clean in its habits, and it generally had a disagreeable smell. Like *H. mungo* it was inquisitive and courageous, and extraordinarily clever in killing snakes. I have seen it kill a Dhamin (*Zamenis mucosus*) over seven feet long; when it had killed a snake, however large, it would drag the body to its cage and then commence eating it, head first, and continued eating till it got so distended that it could not move. The mongoose would then lie on its back, with all four legs stuck straight out, motionless for hours; as soon as it had room internally it continued its meal. On leaving Siam I brought this mongoose with me, hoping to present it to the Zoological Gardens in London, but unfortunately it died suddenly in the Red Sea; on board the steamer it soon became famous among the crew for its celerity in killing rats. Mr. Oldfield Thomas, to whom I sent the skin for identification, writes: "The mongoose is a form of *H. javanicus* for which the names of *exilis* Gerv. and *rutilus* Gray are available if it is distinct, as I believe to be the case. I think you might call it *exilis* for the present, if you need a name."

*Distribution.* Siam, Malay Peninsula, Java.

42. *HERPESTES BRACHYURUS* Gray. The Water Mongoose.

"Musang Túron" of the Malays of the Peninsula (according to Cantor).

"Musang Babi" (Pig-Civet) of the Malays (according to Ridley).

"Bambun" of the Malays of Perak (according to L. Wray).

Cantor (p. 35) records this species from the Malay Peninsula.

Ridley (Nat. Science, vol. vi. 1895, p. 93) records it from Tringganu. In the Museum at Taiping are four stuffed mongooses (two from Larut, Perak) which Mr. Wray considers to be *H. brachyurus*.

A large, dark mongoose in the Museum at Kuala Lumpur probably belongs to this species; as also, I think, does a large, very dark rufous-brown mongoose I have seen in the swamps near Jenan, Kedah.

*Distribution.* Malay Peninsula, Sumatra, Borneo.

## Family HYÆNIDÆ.

Cantor (p. 27) says a Hyæna is reported to occur in the Malay Peninsula, but no Englishman nor native I have met has heard of it there or in Siam.

## Family CANIDÆ.

## 43. CANIS FAMILIARIS L. The Dog.

Owing to the exertions of the Police authorities, pariah dogs are fortunately very scarce in the Straits Settlements nowadays. It is far otherwise in Siam; the miserable, maimed, and mangy pariahs which, together with pigs, vultures, and crows, are the scavengers of Bangkok, are a feature of the place. In the suburbs and country villages the dogs are less diseased, and I have two or three times seen specimens remarkably jackal-like in appearance, but have never seen or heard of true jackals in Siam. These ownerless dogs, or at any rate some of them, run about at night in packs, hunting for their food.

## 44. CYON RUTILANS (S. Müll.). The Malay Wild Dog.

*Cyon primævus*, Cantor, p. 26.

*Cyon rutilans*, Blanford. Faun. Ind., Mamm. p. 147; Ridley, Nat. Science, vol. vi. 1895, p. 94.

"Anjing utan" (Dogs of the woods) of the Malays.

"Srigalah" of the Malays of Perak (according to L. Wray).

The wild dog seems quite unknown in Penang and Singapore, but is distributed through the less settled parts of the Peninsula. In the Museum at Taiping there is a specimen from Kuala Kangsar, Perak; and in the Raffles Museum are specimens from Pahang and Mt. Ophir. Consul T. ff. Carlisle, writing to me from Pailin in the Battambang province of Siam in February 1899, says: "Wild dogs are said to be plentiful in parts of this province. I am trying to get one. I have been told there are two kinds."

*Distribution.* Siam (?), Tenasserim, Malay Peninsula, Sumatra, Java, Borneo (?).

## Family MUSTELIDÆ.

## Subfamily MUSTELINÆ.

## 45. MUSTELA FLAVIGULA Bodd. The Indian Marten.

*Mustela flavigula*, Blanford. Faun. Ind., Mamm. p. 158.

"Anga Prao" of the Malays of the Peninsula (according to Cantor).

Cantor (p. 24) records this species from the Malay Peninsula. In the Museum at Kuala Lumpur there is a specimen caught on a coffee estate about seven miles from Kuala Lumpur.

*Distribution.* Himalayas from Hazara to Assam, hills of Southern India, Ceylon (?), Amurland, South China, Burma, Malay Peninsula, Sumatra, Java (?).

46. *PUTORIUS NUDIPIES* F. Cuv. The Malay Weasel.

*Putorius nudipes*, Blanf. Faun. Ind., Mamm. p. 171.

"Pulásan" of the Malays of the Peninsula (according to Cantor).

Cantor (p. 24) records this species from the Malay Peninsula. In the Museum at Taiping there are specimens from Larut and from Kuala Kangsar, Perak.

Mr. Oldfield Thomas (P. Z. S. 1886, p. 73) mentions a specimen from Klang, collected by Mr. Davison.

*Distribution.* Malay Peninsula, Sumatra, Borneo.

## Subfamily MELINÆ.

It is probable that some species of *Helictis* may be eventually found in Siam. I have not had such an animal described to me by the natives; but villagers on the Bangpakong seemed to recognize the figure of *Mellivora indica* in Blandford's Indian Mammals (p. 177) as a local animal under the name of "Mee-mu."

## Subfamily LUTRINÆ.

47. *LUTRA VULGARIS* Erxl. The Common Otter.

*Lutra vulgaris*, Blanf. Faun. Ind., Mamm. p. 182.

In the Raffles Museum there are three Otters labelled *Lutra vulgaris*, from Singapore and Malacca, but I have not been able to examine the specimens myself. In the Siamese Museum there are two stuffed Otters, apparently of this species, obtained locally; they are very small, and pale in colour.

*Distribution.* Europe and Asia, in suitable localities.

48. *LUTRA MACRODUS* Gray. The Smooth Indian Otter.

*Lutra nair*, Cantor, p. 25.

*Lutra ellioti*, Blanf. Faun. Ind., Mamm. p. 185.

*Lutra macrodus*, Blanf. Fauna Ind., Mamm. Appendix, p. 602.

Recorded from the Malay Peninsula by Cantor. A specimen caught in Selangor is in the Museum at Kuala Lumpur.

*Distribution.* India, Burma, Malay Peninsula.

49. *LUTRA SUMATRANA* Gray. The Hairy-nosed Malay Otter.

*Lutra barang*, Cantor, p. 25.

*Lutra sumatrana*, Blanf. Faun. Ind., Mamm. p. 187.

Recorded from the Malay Peninsula by Cantor, and from Singapore by Ridley (Nat. Science, vol. vi. 1895, p. 94). A specimen caught in Selangor is in the Museum at Kuala Lumpur.

*Distribution.* Malay Peninsula and Islands.

50. *LUTRA CINEREA* Illiger. The Clawless Otter.

*Aonyx leptonyx*, Cantor, p. 25.

*Lutra leptonyx*, Blanf. Faun. Ind., Mamm. p. 187.

*Lutra cinerea*, Blanf. Faun. Ind., Mamm. Appendix, p. 602.

Recorded from the Malay Peninsula by Cantor, from Malacca

by W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 296), from the Tahan River in Pahang by Ridley (J. S. B. R. A. S. 1894, no. 25, p. 58), from Batu Pahat in Johore by Kelsall (J. S. B. R. A. S. 1894, no. 26, p. 16), from Singapore by Ridley (Nat. Science, vol. vi. 1895, p. 94) and by Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9), and there is a specimen caught in Selangor in the Museum at Kuala Lumpur.

*Distribution.* South-eastern Asia.

In the Museum at Taiping I saw five stuffed Otters from Perak, but unfortunately had not time to examine them. Otters were not uncommon on the Bangpakong River in March 1897, but I do not know of what species; the only descriptive note in my diary is "Pachim, 10.3.97.—Young otter; well developed claws; colour of back and sides rich brown, of chin and throat lemon-yellow." In Jan. 1898 I saw the skin of a large Otter in the bazaar at Chantaboon.

#### Family URSIDÆ.

51. *URSUS MALAYANUS* Raffl. The Malay Sun- or Honey-Bear.

*Helarctos malayanus*, Cantor, p. 21.

*Ursus malayanus*, Blanf. Faun. Ind., Mamm. p. 199.

"Bruang" of the Malays.

"Mee" or "Mi" of the Siamese.

Ridley (J. S. B. R. A. S. no. 25, 1894, p. 58) records the Malayan Honey-Bear from the neighbourhood of the Tahan River in Pahang, and (Nat. Science, vol. vi. 1895, p. 93) says "it is tolerably common in the Peninsula, but is absent from Singapore. Formerly rewards were offered for its destruction, but it appears to be quite harmless to man unless wounded, when it becomes dangerous. It is, however, a troublesome enemy to fruit-growers near the jungles in which it lives." In the Museum at Taiping there are specimens from Larut, Perak. In the Museum at Kuala Lumpur there are specimens from Selangor, where it is said to be not uncommon. In the Raffles Museum there is a specimen from Malacca. In 1897 Mr. F. H. Malcolm Staples told me these bears are sometimes seen near Batu Pahat, Johore.

In the Museum at Bangkok there are two stuffed specimens, said to be from Siam; both were brought to the Museum in the flesh, so they probably died in captivity in Bangkok.

*Distribution.* Burma, Siam, Malay Peninsula (Perak, Selangor, Malacca, Pahang, Johore), Sumatra, Java, Borneo.

52. *MELURSUS URSINUS* (Shaw). The Sloth-Bear.

*Melursus ursinus*, Blanf. Faun. Ind., Mamm. p. 201.

If the Sloth-Bear be really found in Siam its range extends much farther east than is generally imagined. Several men told me there was a large black bear in the country, and the accounts of its unprovoked attacks on natives walking on jungle-paths accord with accounts of the habits of this species in Southern

India. Mr. St. Stephen, Manager of the Kabin Gold Mines, on the Bangpakong River, told me, when I was there, that in 1895 or 1896 a coolie was killed by a bear near the mines; he went out after the animal, but failed to find it. Some of the European engineers constructing the railway through the Dong Phya Fai said that bears were numerous in the hills of that forest, having their dens among the rocks.

In the Siamese Museum is a stuffed Sloth-Bear, obtained before I went there, labelled by one of my predecessors "Siam"; I made particular enquiries about it, and was assured by the Siamese that it came from the Laos country. But more evidence is wanted to prove that this species inhabits either the Laos States or Siam.

*Distribution.* India, Ceylon, Assam (?), Burma (?), Siam (?).

## Order INSECTIVORA.

### Family TUPAIIDÆ.

53. *TUPAIA FERRUGINEA* Raffl. The Malay Tree-Shrew.

*Tupaia ferruginea*, Cantor, p. 18; Blanf. Faun. Ind., Mamm. p. 210.

"*Tupaia tana*" of the Malays of Penang (*apud* Cantor).

"This singular little animal was first observed tame in the house of a gentleman at Penang, and afterwards found wild at Singapore and in the woods near Bencoolen" (Sir Stamford Raffles, *circa* 1819). Cantor records it from "Pinang, Singapore, Malayan Peninsula," and gives some account of its habits, as also does Ridley (Nat. Science, vol. vi. 1895, p. 28), who records it from Pahang (J. S. B. R. A. S. no. 25, Jan. 1894, p. 58). Oldfield Thomas (P. Z. S. 1886, p. 73) records it from Malacca and Jelang, Selangor. In the Museum at Taiping there is a specimen from the Waterfall Hill, Larut, labelled *T. tana*, but probably of this species. The Museum at Kuala Lumpor contains specimens from Selangor.

*Distribution.* Nepal, Assam, Burma, Malay Peninsula (Penang, Perak, Selangor, Pahang, Malacca, Singapore), Sumatra, Java, Borneo.

54. *TUPAIA JAVANICA* Horsf. The Javanese Tree-Shrew.

Discovered by Horsfield in Java in 1806. Recorded from Pahang (Ridley, J. S. B. R. A. S. no. 25, Jan. 1894, p. 58), and from Selangor and Johore (O. Thomas, P. Z. S. 1886, p. 73).

*Distribution.* Malay Peninsula (Selangor, Pahang, Johore), Sumatra, Java, Borneo.

N.B.—Dr. Anderson (Cat. Mamm. Indian Mus. part i. p. 156, 1881) records two specimens of *Tupaia malaccana* from Malacca.

I did not myself see a *Tupaia* in Siam, but there can be little doubt that at least one species occurs there. An English friend told me of an animal inhabiting his garden in Bangkok which was probably *T. ferruginea*, and the Siamese described it to me under the name of "Kra' chang."

## Family ERINACEIDÆ.

## 55. GYMNURA RAFFLESI Vig. &amp; Horsf. Raffles's Gymnura.

*Gymnura rafflesi*, Cantor, p. 20; Blanf. Faun. Ind., Mamm. p. 220, fig. 57.

"Tikus ámbang búlan" of the Malays (*apud* Raffles).

"Munduk" of the Malays of Selangor, according to A. L. Butler.

"In a district not distant from Malacca, the animal is said to be numerous, though not to be seen in other localities" (Cantor). In the Museum at Taiping there is a stuffed specimen from Tapah, Perak, and there are two specimens from Kuala Lumpor in the Museum at that place.

*Distribution.* Tenasserim, Malay Peninsula (Perak, Selangor, Malacca), Sumatra, Borneo.

## 56. GYMNURA SUILLA (Müll. &amp; Schleg.). The Smaller Gymnura.

*Distribution.* "Burma, Malay Peninsula, Sumatra, and Java." (Blanf. Faun. Ind., Mamm. p. 222.)

## Family SORECIDÆ.

## 57. CROCIDURA MURINA (Linn.). The Brown Musk-Shrew.

*Sorex murinus*, Cantor, p. 21.

*Crocidura murina*, Blanf. Faun. Ind., Mamm. p. 233.

"Chinchorot" of the Malays of the Peninsula (*apud* Cantor).

"Nu-pee" or "Nu-ring" of the Siamese.

Cantor records this species from Penang and says: "The smell of musk, emitted by the adult animal, and which in the young is barely perceptible, is much less intense than that of the Bengal Musk-Shrew." O. Thomas (P. Z. S. 1886, p. 73) records a specimen from Singapore. Ridley (Nat. Science, vol. vi. 1895, p. 29) says the Musk-Shrew "is most abundant in gardens and near houses, and often perfumes the lower part of the house with its strong musky smell." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) mentions specimens in the Museum at Singapore from Singapore and Pahang. In the Siamese Museum there is one specimen, in spirit, from Bangkok.

*Distribution.* South-east Asia, in suitable localities.

## 58. CROCIDURA CÆRULEA (Kerr). The Grey Musk-Shrew.

*Crocidura cærulea*, Blanf. Faun. Ind., Mamm. p. 236.

This so-called "Musk-Rat" is common in houses in Georgetown, Penang, and in Tanglin, Singapore; in both localities I have frequently caught individuals in rat-traps baited with toast.

*Colour* (a Penang specimen) bluish grey, paler below, hairs of back with slightly ferruginous brown tips. Skin of snout and feet flesh-coloured. Hair on backs of hands and feet white.

*Distribution.* South-east Asia, in suitable localities.

N.B.—A large Musk-Shrew occurs on the mainland of the Peninsula; I have seen specimens both in Kedah and in Taiping, Perak, but cannot say whether the species is *C. murina* or *C. cærulea*.

## Family GALEOPITHECIDÆ.

59. *GALEOPITHECUS VOLANS* (Linn.). The Flying Lemur.

*Galeopithecus temminckii*, Cantor, p. 7.

*Galeopithecus volans*, Blanf. Faun. Ind., Mamm. p. 249, figs. 70 & 71.

"Kubong" or "Kurbong" of the Malays.

? "Bang" of the Siamese.

Cantor gives as the habitat of this species "Singapore, Pinang, and other Islands in the Straits of Malacca, Lancavy Islands, Malayan Peninsula, Java, Sumatra, Borneo, Pelew Islands, Siam." Dr. Anderson (Cat. Mamm. Indian Mus. part i. p. 153, 1881) records a specimen from Perak: "skin of a young animal, much variegated with grey, brownish and black, interspersed with white spots," and others from Malacca. O. Thomas (P. Z. S. 1886, p. 73) records specimens collected by Mr. Davison in the Dindings and in Malacca. Ridley (Nat. Science, vol. vi. 1895, p. 27) says it "is plentiful in some parts of Singapore," and (J. S. B. R. A. S. no. 25, 1894, p. 58) records it from Kuala Tahan, Pahang. In the Taiping Museum there are several stuffed specimens from Larut, Perak; there are also specimens from Selangor in the Museum at Kuala Lumpur.

A specimen shot at the foot of Gunung Pulai, Johore, was found up a tree in the daytime. When disturbed it parachuted to a neighbouring tree, and started climbing up the trunk; it had a young one clinging to it.

A Penang example was obtained by moonlight, climbing on the trunk of a tree about 60 feet above the ground. The iris was dark brown, the ears pinky-red (this is very noticeable in life); the stomach was very full, its contents apparently all vegetable matter.

*Distribution.* Tenasserim, Siam, Malay Peninsula (Lancavy, Penang, Perak, Dindings, Selangor, Pahang, Malacca, Johore, Singapore), Sumatra, Java, Borneo.

## Order CHIROPTERA.

## Family PTEROPODIDÆ.

The species of *Pteropus*, Large Fruit-Bats or "Flying-Foxes," are known to the Malays as "Kluang," "Keluang" or "Kelawang," and to the Siamese as "Käng-khaw maa-kai" or "Chankhoo maakai"; the meaning of this name I have not been able to make out for certain, but if it was originally composed of the four words that now compose it, would seem to suggest "The mother of the fowls that shield the stars," a really poetic epithet for the largest known bats.

In some places in Siam the Buddhist priests consider these bats sacred. During my time in Siam I seldom saw any Fruit-Bats, but when they were seen they were invariably in large numbers, as the following extracts from my diary show:—

18.3.97. At Tahkamen, many *Pteropi* flying about in the moon-light.

19.3.97. At Tahkamen, at dusk see scores of *Pteropi* flying over the village wat (temple).

15.4.97. On the side of the Bangpakong River between Pachim and Patriew, see a tree covered with *Pteropi*, hanging up asleep; it was black with them, the branches bending under their weight.

12.8.97. At Bangkok, about 7 P.M., large Fruit-Bats kept flying over the compound, some very high in the air, others just high enough to clear the trees and roofs of the buildings; they were all going in the same direction, north-west.

These may have been either of the two following species.

60. *PTEROPUS MEDIUS* Temm. The Indian Fruit-Bat or Flying-Fox.

*Pteropus medius*, Blanf. Faun. Ind., Mamm. p. 257.

Blanford says this species "is not recorded east or south of Burma," but I believe it occurs in Siam. In the Siamese Museum there are two stuffed Fruit-Bats, one labelled "Bangkok," apparently of this species; and two that I shot on the Bangpakong River in March 1897 I should refer to this species; they were both males, length of forearm 152 mm. (or 6 inches), and the lower breast and abdomen were very dark brown. Unfortunately I did not keep their skins (owing to their very offensive smell, characteristic of these bats), for Mr. Oldfield Thomas writes to me (15.5.97), "I expect your *Pteropus* is not *P. medius* but *P. vampyrus* (*P. edulis* of Catalogue) . . . . I do not think *P. medius* reaches Siam."

*Distribution.* India, Ceylon, and Burma, as far south as Amherst near Moulmein (O. Thomas, P. Z. S. 1886, p. 67); Siam (?).

61. *PTEROPUS EDULIS* Geoff. The Malay Flying-Fox.

*Pteropus edulis*, Cantor, p. 16; Blanf. Faun. Ind., Mamm. p. 259.

*Pteropus vampirus*, Ridley, Nat. Science, vi. 1895, p. 27.

Cantor records this species from "Pinang, Singapore, Malayan Peninsula and Islands." Horsfield (Cat. Mamm. Mus. East-India Co. 1851, p. 27) mentions a specimen from Siam obtained by Finlayson.

Dobson (Cat. Chir. B. M. p. 49) records specimens from "Isles of Kallam, Straits of Malacca." O. Thomas (P. Z. S. 1886, p. 73) records specimens from Klang.

Lieut. H. J. Kelsall, R.A., in a list of Mammals from Johore, (J. S. B. R. A. S. no. 26, 1894, p. 16), says: "*Pteropus edulis*, Gray. I only saw a single specimen of this large fruit-bat, at Kuala Kabang. It is probably common." Ridley (J. S. B. R. A. S. no. 25, 1894, p. 58) gives this species as common at Pekan, Pahang; and as regards those at Singapore (Nat. Sci. vi. 1895, p. 27) says: "The large fruit-bats are abundant at certain times, appearing in vast numbers and taking up their abode in some chosen spot, remaining there for some two or three months and then scattering again and

disappearing utterly. One year the [Botanical] Garden jungle was a favoured spot, and it was roughly calculated that seventy thousand roosted there every day. The reason for this flocking of the fruit-bats I cannot guess, as it appears to take place at no particular time of year, nor does it bear any relation to the fruit season."

In April 1895 I noticed this bat on Penang Hill, at 2500 feet above the sea. In the Museum at Taiping are specimens from Tapak, Perak; the Museum at Kuala Lumpur contains a specimen from Klang, and the Raffles Museum contains Singapore specimens.

*Distribution.* Mergui Archipelago, Tenasserim(?), Andamans(?), Nicobars(?), Siam(?), Malay Peninsula (Penang, Perak, Selangor, Pahang, Johore, Singapore), Sumatra, Java, Borneo, Philippines, Banda, Ternate, Timor.

62. *XANTHARPYIA AMPLEXICAUDATA* (Geoffr.). The Fulvous Fruit-Bat.

*Xantharpyia amplexicaudata*, Blanf. Faun. Ind., Mamm. p. 261.

Dobson (Cat. Chir. B. M. p. 73) records a specimen collected by M. Mouhot in the Laos Mountains.

*Distribution.* Persian Gulf, India, Ceylon, Burma, Siam, Sumatra, Philippines, Celebes, Amboyna, Timor, Flores, Aru Islands.

63. *CYNOPTERUS MARGINATUS* (Geoffr.). The Short-nosed Fruit-Bat.

*Cynopterus marginatus*, Cantor, p. 17; Blanf. Faun. Ind., Mamm. p. 263.

Cantor records this species from "Singapore, Pinang, Malayan Peninsula and Islands." Horsfield (Cat. Mamm. Mus. East-India Co. 1851, p. 30) mentions specimens from Malacca under the name of *Cynopterus titthæcheilus*.

Dobson (Cat. Chir. B. M. pp. 83, 84) records specimens from Penang and Malacca. Anderson (Cat. Mamm. Indian Mus. i. 1881, p. 106) records specimens from Penang.

Thomas (P. Z. S. 1886, p. 73) records specimens from "Jerome," Selangor, and from Singapore Island.

Ridley (Nat. Science, vi. 1895, p. 28) mentions this species as being the bat that most commonly flies into houses in Singapore at night, and says: "The fruit-bats, being clumsy and stupid, have much difficulty in finding their way out again, and are easily caught; but the insectivorous bats are much more clever, and fly in and out with ease."

In the Siamese Museum there was a specimen in spirit, labelled "Bangkok." I have met this species in Georgetown, Penang, and at various places in Singapore, where it seems numerous; it may be found by day in trees hanging up asleep.

*Distribution.* India, Ceylon, Burma, Andamans, Siam, Malay Peninsula (Penang, Selangor, Malacca, Singapore), Sumatra, Java, Billiton, Borneo, Philippines.

## 64. CYNOPTERUS LUCASI Dobs. Lucas's Fruit-Bat.

I understand Mr. Ridley has obtained this species both in Singapore Island (O. Thomas, A. M. N. H. ser. 7, i. p. 361, 1898) and in Selangor (Hanitsch, Rep. Raffles Libr. & Mus. 1897, p. 11).

*Distribution.* Malay Peninsula (Selangor and Singapore) and Borneo.

## 65. CARPONYCTERIS MINIMA (Geoffr.). The Small Long-tongued Fruit-Bat.

*Carponycteris minima*, Blanf. Faun. Ind., Mamm. p. 265.

Anderson (Cat. Mamm. Indian Mus. part i. 1881, p. 107) records a specimen from Siam collected by Dr. G. Finlayson, probably the same individual mentioned by Horsfield (Cat. Mamm. Mus. East-India Co. 1851, p. 29) "with a lengthened nose, perhaps a distinct species."

*Distribution.* Sikhim, Burma, Siam, Java, Philippines, Australia, New Ireland.

Another Fruit-Bat, *Eonycteris spelæa* (Dobs.), known from Burma, Cambodia, and Java, will probably be eventually found to occur in Siam and the Malay Peninsula.

## Family RHINOLOPHIDÆ.

## 66. RHINOLOPHUS LUCTUS Temm. The Great Eastern Horse-shoe-Bat.

*Rhinolophus luctus*, Blanf. Faun. Ind., Mamm. p. 270.

Dobson (Cat. Chir. B. M. p. 106) records a specimen from Malacca.

*Distribution.* India, Ceylon, Burma, Malay Peninsula (Malacca), Java, Sumatra, Borneo, Philippines.

## 67. RHINOLOPHUS CÆLOPHYLLUS Peters. The Crosletted Horse-shoe-Bat.

*Rhinolophus cælophyllus*, Blanf. Faun. Ind., Mamm. p. 272.

I caught a single male in Bakar Bata house, near Alor Star, Kedah, 1st June, 1898. Mr. O. Thomas, to whom the specimen was sent, has confirmed my identification of the species.

*Distribution.* Burma, and Malay Peninsula (Kedah).

## 68. RHINOLOPHUS TRIFOLIATUS Temm. The Three-foliated Horseshoe-Bat.

*Rhinolophus trifolius*, Blanf. Faun. Ind., Mamm. p. 272.

Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) mentions this species from Singapore.

*Distribution.* India, Assam, Mergui, Malay Peninsula (Singapore) Java, Borneo.

69. RHINOLOPHUS AFFINIS Horsf. The Allied Horseshoe-Bat.

*Rhinolophus affinis*, Cantor, p. 11; Blanf. Faun. Ind., Mamm. p. 274.

Cantor records two individuals from Penang.

Dobson (Cat. Chir. B. M. p. 112) records a specimen from Penang, from Cantor.

Ridley obtained this species in Selangor (O. Thomas, A. M. N. H. ser. 7, i. p. 361).

Dimensions of Penang specimens, after Cantor:—

Sex .....	♂.		♀.	
Entire length .....	64 mm.	2·5 in.	73 mm.	2·89 in.
Tail .....	13 mm.	·5 in.	16 mm.	·63 in.
Extent .....		11·25 in.		12·5 in.

*Distribution.* India, Ceylon, Burma, Cochinchina, Malay Peninsula (Penang and Selangor), Sumatra, Java, Borneo.

70. RHINOLOPHUS MINOR Horsf. The Little Indian Horseshoe-Bat.

*Rhinolophus minor*, Blanf. Faun. Ind., Mamm. p. 276.

Dobson (Cat. Chir. B. M. p. 115) records a specimen from Siam. Ridley obtained this species in Selangor (O. Thomas, A. M. N. H. ser. 7, i. p. 361).

*Distribution.* India, Burma, Siam, Japan, Malay Peninsula (Selangor), Sumatra, Java, Borneo.

71. HIPPOSIDERUS ARMIGER (Hodgs.). The Great Himalayan Leaf-nosed Bat.

*Hipposideros diadema*, Gray?, Cantor, p. 11.

*Hipposiderus armiger*, Blanf. Faun. Ind., Mamm. p. 283.

Cantor records this species from Penang and the Malay Peninsula. Dobson (Cat. Chir. B. M. p. 136) mentions a specimen from Penang from Cantor.

In the Siamese Museum there was a specimen in spirit, apparently of this species, from Chantaboon.

*Distribution.* India (Himalayas, Khasi Hills), Burma?, China, Cochinchina, Siam, Malay Peninsula (Penang).

72. HIPPOSIDERUS DIADEMA (Geoffr.). The Large Malay Leaf-nosed Bat.

*Hipposideros nobilis*, Cantor, p. 12.

*Hipposiderus diadema*, Blanf. Faun. Ind., Mamm. p. 284.

Cantor records this species from Penang and the Peninsula, and says: "In the valley of Pinang single individuals of both species (i. e. *H. diadema* and *H. armiger*) are at night abroad at all seasons, but during the rains they are particularly numerous." Dobson

(Cat. Chir. B. M. p. 137) mentions a specimen from Penang; O. Thomas (P. Z. S. 1886, p. 73) a specimen from Gunong Pulai, Johore, collected by Davison. Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records this species from Kuala Lumpur. In the Siamese Museum there is a specimen in spirit, apparently of this species, labelled "Bangkok."

*Distribution.* India (locally), Ceylon, Burma, Siam, Malay Peninsula (Penang, Selangor, Johore), Sumatra, Java, Borneo, Timor, Batchian, Amboyna, Philippines, Aru Islands.

73. *HIPPOSIDERUS GALERITUS* Cantor. Cantor's Leaf-nosed Bat.

*Hipposideros galeritus*, Cantor, p. 13.

*Hipposiderus galeritus*, Blanf. Faun. Ind., Mamm. p. 287.

Cantor described this species from "a solitary male captured in the valley of Pinang." Dobson (Cat. Chir. B. M. p. 142) records a specimen from Singapore, collected by A. R. Wallace.

*Distribution.* India (near Bellary), Ceylon, Malay Peninsula (Penang and Singapore), Java and Borneo.

74. *HIPPOSIDERUS LARVATUS* (Horsf.). Horsfield's Leaf-nosed Bat.

*Hipposideros vulgaris*, Cantor, p. 13.

*Hipposiderus larvatus*, Blanf. Faun. Ind., Mamm. p. 288.

Cantor records this species from Penang. Dobson (Cat. Chir. B. M. p. 145) records a specimen from Siam, collected by M. Mouhot.

*Distribution.* Assam, Sylhet, Burma, Siam, Malay Peninsula (Penang), Java, Borneo (Notes Leyd. Mus. xix. p. 52). Philippines?

75. *HIPPOSIDERUS BICOLOR* (Temm.). The Two-coloured Leaf-nosed Bat.

*Hipposideros murinus*, Cantor, p. 13.

*Hipposiderus bicolor*, Blanf. Faun. Ind., Mamm. p. 289.

Cantor records this species from Penang. Dobson (Cat. Chir. B. M. pp. 150, 151) records specimens of *H. bicolor* (typical variety, with ears as long as the head) from Penang and Singapore. O. Thomas (P. Z. S. 1886, p. 73) mentions a specimen from Klang, Selangor, collected by Davison—"♂, more pointed ears, a broader horizontal nose-leaf, and a much more largely developed projection between the nostrils than is usually the case in this species." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) mentions *Phyllorhina bicolor*, var. *fulva*, from Kuala Lumpur.

I found *Hipposiderus bicolor fulvus* very numerous at Alor Star, Kedah, in May and June 1898, specimens flew into our house almost every night; and on the 26th June, 1898, I caught a single specimen in a house in Kuala Lumpur, Selangor, probably *fulvus*,

of which Mr. Oldfield Thomas remarks "rather different from others, but these *Hipposideri* want further working at."

*Distribution.* India, Ceylon, Assam, Burma, China, Nicobars, Malay Peninsula (Kedah, Penang, Selangor, Singapore), Java, Borneo, Philippines.

76. *HIPPOSIDERUS AMBOINENSIS* (Peters). The Little Leaf-nosed Bat.

*Hipposiderus amboinensis*, Blanf. Faun. Ind., Mamm. p. 290.

I caught two specimens on Penang Hill, 2400 feet, in March 1898.

*Distribution.* India (Himalayas and near Bellary), Malay Peninsula (Penang), Amboyna.

77. *HIPPOSIDERUS STOLICZKANUS* (Dobson). Stoliczka's Leaf-nosed Bat.

*Phyllorhina stoliczkana*, Dobs. Mon. As. Chir. p. 61, figs. *a*, *b*; and Cat. Chir. B. M. p. 132.

The type specimen was obtained by Dr. Stoliczka in Penang and presented by him to the Indian Museum, 1871.

*Distribution.* Malay Peninsula (Penang).

78. *CÆLOPS FRITHI*, Blyth. The Tailless Leaf-nosed Bat.

*Cælops frithi*, Blanf. Faun. Ind., Mamm. p. 291, fig. 88.

*Distribution.* "Originally described from a Sundarban specimen, but has recently been discovered at Darjiling by Col. Kinloch. It has also been found in Siam and Java."

#### Family NYCTERIDIDÆ.

79. *MEGADERMA SPASMA* (Linn.). The Malay Vampire Bat.

*Megaderma spasma*, Cantor, p. 19.

*Megaderma spasma*, Blanf. Faun. Ind., Mamm. p. 294.

Cantor records this species from Penang and the Peninsula.

Dobson (Cat. Chir. B. M. p. 158) records specimens from Penang, Singapore, and Siam.

Anderson (Cat. Mamm. Indian Mus. part i. 1881, p. 121) mentions specimens from Malacca, presented by Mr. W. G. Moxon, 1850.

Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) mentions specimens from Penang and from Selangor.

*Distribution.* Southern India?, Ceylon?, Tenasserim, Siam, CochinChina, Malay Peninsula (Penang, Selangor, Malacca, and Singapore), Sumatra, Java, Borneo, Celebes, Philippines, Ternate.

80. *NYCTERIS JAVANICA* Geoff.

*Nycteris javanica*, Dobs. Mon. As. Chir. p. 81; and Cat. Chir. B. M. p. 164.

Anderson (Cat. Mamm. Indian Mus. part i. 1881, p. 122)

records a specimen from Malacca, presented by Mr. W. G. Moxon, 1851.

*Distribution.* Malay Peninsula (Malacca), Java.

#### Family VESPERTILIONIDÆ.

##### 81. VESPERUGO NOCTULA (Schreb.). The Noctule Bat.

*Vesperugo noctula*, Blanf. Faun. Ind., Mamm. p. 308, fig. 93.

Dobson (Cat. Chir. B. M. p. 214) records a specimen from Singapore, called *Noctulina malaccensis* by Gray.

*Distribution.* Europe, Africa, Turkestan, India, Ceylon, China, Japan, Malay Peninsula (Singapore), Sumatra, Java.

##### 82. VESPERUGO IMBRICATUS (Horsfield).

*Vesperugo imbricatus*, Dobson, Mon. As. Chir. p. 93, and Cat. Chir. B. M. p. 217.

*Distribution.* "Malay Peninsula (Malacca); Java" (Dobson).

##### 83. VESPERUGO TENUIS (Temm.).

*Kirivoula tenuis*, Cantor, p. 15.

*Vesperugo tenuis*, Dobson, Cat. Chir. B. M. p. 226.

Cantor records this species from Penang.

*Distribution.* Malay Peninsula (Penang), "Sumatra, Java, Bo neo."

##### 84. VESPERUGO ABRAMUS (Temm.). The Indian Pipistrelle.

*Vesperugo abramus*, Blanf. Faun. Ind., Mamm. p. 313.

Dobson (Cat. Chir. B. M. p. 228) records a specimen from Singapore. I caught specimens in the Officers' Mess, Sepoy Lines, Penang, in March, April, May, and June, 1895.

*Distribution.* Europe, India, Ceylon, Burma, Cambodia, China, Japan, Malay Peninsula (Penang and Singapore), Philippines, Celebes, New Guinea, Northern Australia.

##### 85. VESPERUGO RIDLEYI (Thomas). Ridley's Pipistrelle.

*Pipistrellus ridleyi*, O. Thomas, A. M. N. H. ser. 7, i. p. 361 (1898).

Obtained by Mr. H. N. Ridley in Selangor, "caught under a railway arch."

*Distribution.* Malay Peninsula (Selangor).

##### 86. VESPERUGO BLANFORDI Dobson. Limborg's Bat.

*Vesperugo blanfordi*, Blanf. Faun. Ind., Mamm. p. 317.

Anderson (Cat. Mamm. Indian Mus. parti. 1881, p. 133) mentions a specimen from Johore presented by Wood-Mason in 1873.

*Distribution.* Burma and Malay Peninsula (Johore).

87. *NYCTICEIUS KUHLI* (Leach). East Indian Yellow Bat.

*Scotophilus temminckii*, Cantor, p. 15.

*Nycticejus kuhli*, Blanf. Faun. Ind., Mamm. p. 320.

"Klâwah" of the Malays of the Peninsula (Cantor).

Cantor records this species from "Singapore, Penang, Malayan Peninsula and Islands," and says:—"This species is exceedingly numerous, forming large congregations in sheltered situations on the Malayan Peninsula, and in the caves on the numerous islands of limestone which stud the shores from Moulmein to Java, and in such localities large deposits of guano occur. The latter ('Ty Klâwah' of the Malays, *i. e.* bats' manure) has been tried by agriculturists at Penang, but has been found much less efficacious than the guano obtained from the swift (*Collocalia*) producing the edible nests." Horsfield says: "This species is very abundant, collecting by companies of hundreds, in trunks and hollows of trees, and feeding chiefly on white ants."

I caught a single specimen in the Officers' Mess House, Sepoy Lines, Penang, 23rd May, 1895.

♂. Head and body 2.63 inches; forearm 1.92; tail 1.65; extent 13.5

Near Alor Star, in Kedah, I found this species very numerous in June, 1898; the Malay boys caught them in nets. Out of eleven individuals examined only two were males.

*Colour.* Fur very dark brown above, the basal portion of the hair yellowish brown, pale yellowish brown below; ears and wing-membranes very dark brown.

Of these specimens Mr. Oldfield Thomas writes to me: "The *Scotophilus kuhli* from Kedah is quite remarkably dark-coloured. Had it not been for the existence of *S. castaneus* Gray from Pinang, I might have been tempted to give it a subspecific name."

*Distribution.* India, Ceylon, Assam, Burma, Malay Peninsula (Kedah, Penang, Singapore), Sumatra, Java, Borneo, Flores, Philippines.

88. *VESPERTILIO HASSELTII* Temm. Van Hasselt's Bat.

*Distribution.* "Malay Peninsula, Siam, Sumatra, Java, &c. . . Burma" (Blanf. Faun. Ind., Mamm. p. 330).

89. *VESPERTILIO ADVERSUS* Horsfield.

*Vespertilio adversus*, Blanf. Faun. Ind., Mamm. p. 330.

Dobson (Cat. Chir. B. M. p. 293) records specimens from Siam presented by Mr. W. H. Newman. Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) mentions "*Vespertilio adversus*" from Singapore.

*Distribution.* Burma?, Siam, Java, Borneo, Celebes, Australia, Malay Peninsula (Singapore).

90. *VESPERTILIO OREIAS* Temm.

*Distribution.* Singapore (Dobson, Cat. Chir. B. M. p. 305).

91. *VESPERTILIO MURICOLA* Hodgs. The Mustachioed Bat.*Vespertilio adversus*, Horsfield?, Cantor, p. 14.*Vespertilio muricola*, Blanf. Faun. Ind., Mamm. p. 337, fig. 109.

Cantor records this species from Penang.

Dobson (Cat. Chir. B. M. p. 317) records specimens from Siam, collected by M. Mouhot, and from Singapore.

In a house at Kuala Lumpor, Selangor, 26th June 1898, I caught a young bat, probably of this species; and in Bangkok, 5th Aug 1898, an undoubted specimen, also caught in a house.

*Distribution.* India, Ceylon, Tibet, Burma, Siam, Mergui Archipelago, Malay Peninsula (Penang, Selangor, Singapore), Sumatra, Java, Borneo, Celebes, Amboyna.92. *VESPERTILIO TRALATITUS* Horsf.“*Trilatitus horsfieldi*, Gray,” Cantor, p. 15.

Cantor records this species from Penang.

*Distribution.* Malay Peninsula (Penang), Sumatra, Java.93. *CERIVOULA PICTA* (Pall.). The Painted Bat.*Kirivoula picta*, Cantor, p. 15.*Cerivoula picta*, Blanf. Faun. Ind., Mamm. p. 339.

Cantor records this species from Penang. The Siamese Museum contained one spirit specimen, a male, not labelled but evidently obtained locally; its dimensions were:—

Head and body .....	40 mm.	1·58 in.
Tail .....	40 „	1·58 „
Ear .....	12 „	·5 „
Forearm .....	34 „	1·24 „
Extent .....	240 „	about 8·5 „

Subsequently I obtained another Siamese specimen through the kindness of Phra Ong Chow Sye Sanitwongse, who sent it with this interesting note: “6th April 1898. Orange-coloured bat from a swamp called Bang Falari at the Rangsit Canal: it sleeps in the flower of the Cala Lilly.”

*Distribution.* India, Ceylon, Burma, Siam, Malay Peninsula (Penang), Sumatra, Java; Borneo?

## Family EMBALLONURIDÆ.

94. *TAPHOZOUS MELANOPOGON* Temm. Black-bearded Sheath-tailed Bat.*Taphozous melanopogon*, Cantor, p. 10; Blanf. Faun. Ind., Mamm. p. 347.

Cantor records this bat from Pulo Tikus, Pulo Lancavy, and the

Peninsula. Dobson (Cat. Chir. B. M. p. 381) records specimens from Penang and Pulo Tikus (Dr. Cantor).

*Habits.* In Bangkok I found these bats very numerous at all times of the year, spending the daytime in the roofs of buildings; a score or more were generally to be seen in the kitchen of the somewhat ruinous house I lived in. In the evenings they used to hunt regularly for insects in the house, flying from room to room in turn, with occasional pauses for rest on the walls; the great pace at which they flew, their graceful circling swoops, and the unerring accuracy with which they passed at full speed through



Head of *Taphozous melanopogon*, ♂.

Three-quarter and profile views. (Slightly larger than life.)

the holes in the wooden partitions between the rooms, were a constant pleasure to watch on many a damp, stifling-hot night. Their voice is very shrill and ear-piercing. They are very active in climbing about, and it is very curious seeing a party of them (disturbed during the day) retreating *backwards* up a wall. They

generally rest suspended by their hind feet, with the head rather thrust up, and the big ears flat against their necks.

In April 1898 I found these bats fairly numerous on the little island of Pulo Tikus, near Penang. They were living in the small caves by the sea, which are only accessible (to human beings) at low tide; the way the bats crawl over the rocks is wonderful, the general effect being more that of a crab than a mammal. I have also received a specimen of this species from Chantaboon.

*Colour.* Five specimens (3 ♂, 2 ♀) caught on Pulo Tikus on the same day (9.4.98) showed great variations in colour:—

♂ (a). Pale mouse-colour, tinged with rufous, breast lighter, belly white, black patch on throat.

♂ (b). Very yellowish rufous.

♂ (c). Dark grey; this specimen was rather smaller than either a or b, which were subequal in size.

♀ (d). Pale mouse-colour, breast lighter, belly white.

♀ (e). Similar to d, but darker and browner above.

The illustration of the head of this species given by Dobson (P. Z. S. 1875, and Mon. As. Chir. p. 167), which has been used in subsequent books (Cassell's Nat. Hist. i. p. 316, and Blanf. Faun. Ind., Mamm. p. 347, fig. 114), is, I venture to think, not adequate in giving a good idea of the physiognomy of this bat. The appended sketches (see p. 348) of a male, from Bangkok, drawn from life, will be seen to differ from Dobson's figure in the profile of the nose, the form and serrations of the ear, and the bristles on the face. Also *T. melanopogon* has a bright, intelligent look, which is lost in Dobson's figure, apparently drawn from a spirit specimen.

*Distribution.* India, Burma, Siam, Cochinchina, Malay Peninsula (Lancavy, Penang), Java, Borneo, Philippines.

95. *TAPHOZOUS LONGIMANUS* Hardw. Long-armed Sheath-tailed Bat.

*Taphozous longimanus*, Blanf. Faun. Ind., Mamm. p. 348.

Dr. F. A. Jentink (Notes from the Leyden Museum, vol. xix. p. 54, January 1897) says of specimens of this bat from Sintang, Borneo:—"The wings are white, strikingly contrasting with the dark-coloured (in alcohol) rest of the animal." Mr. Oldfield Thomas (A. M. N. H. ser. 7, vol. ii. p. 246, Sept. 1898) describes these white-winged specimens as *Taphozous longimanus albipinnis*, with a female from Labuan, collected by the late Mr. A. H. Everett, as the type of the subspecies, and says: "Four other Bornean specimens are similarly white-winged, and there is also a white-winged specimen in the Museum collection from Malacca collected long ago by Mr. A. Charlton" (*vide* Dobson, Cat. Chir. B. M. p. 385). During a few days I spent in Labuan in Sept. and Oct. 1897 a white-winged *Taphozous* was very noticeable, flying at evening-time in large numbers over the road from Usher Market to the Post Office, but I do not know whether they belonged to this species

or to *T. affinis* (also recorded from Labuan), or both. This was the only locality where I observed any white-winged bats.

*Distribution.* India, Ceylon, Burma, Malay Peninsula (Malacca), Borneo.

96. *TAPHOZOUS SACCOLLEMUS* Temm. Pouch-bearing Sheath-tailed Bat.

*Taphozous saccoluimus*, Cantor, p. 10.

*Taphozous saccollemus*, Blanf. Faun. Ind., Mamm. p. 350.

Cantor mentions "two males captured at Pinang in houses in the valley."

Dobson (Cat. Chir. B. M. p. 389) records a specimen from Singapore.

*Distribution.* Peninsula of India, Ceylon, Sylhet, Burma, Malay Peninsula (Penang and Singapore), Sumatra, Java.

97. *TAPHOZOUS AFFINIS* Dobson.

*Taphozous affinis*, Dobson, Cat. Chir. B. M. p. 389.

A male was caught by Mr. Robertson Glasgow in the Botanical Gardens, Singapore, on Nov. 19, 1897, and presented by him to the Raffles Museum (Ridley, J. S. B. R. A. S. no. 31, 1898, p. 104).

*Distribution.* Singapore, Sumatra, Labuan.

98. *RHINOPOMA MICROPHYLLUM* Geoffr. The Long-tailed Bat.

*Rhinopoma hardwickii*, Cantor, p. 8.

*Rhinopoma microphyllum*, Blanf. Faun. Ind., Mamm. p. 351, figs. 116 & 117.

Cantor says: "A single male, in no way differing from Bengal individuals, was obtained by Captain Congalton, H.C. Steamer 'Diana,' in a cave on an island in Girbee river, in latitude 8° 0', on the Malayan Peninsula."

*Distribution.* N.E. Africa, Syria, India, Burma, and Malay Peninsula (latitude of Junkceylon).

99. *CHIROMELES TORQUATUS* Horsf. The Hairless Bat.

*Cheiromeles torquatus*, Dobson, Cat. Chir. B. M. p. 405.

Recorded from Penang, Malacca, and Singapore by Dobson (*op. cit.*). Anderson (Cat. Mamm. Indian Mus., part i. 1881, p. 150) mentions a specimen from Siam collected by Finlayson, which is also mentioned by Horsfield (Cat. Mamm. Mus. East India Co. 1851, p. 42), who says: "Discovered by Mr. George Finlayson, while attached to the mission of John Crawford, Esq., to Siam and Cochin China. The precise locality is not known."

Ridley (Nat. Science, 1895, vol. vi. p. 28) says, in Singapore "this is not a rare species. When it comes into the house at night, unlike most insectivorous bats, it is confused by the light, and is easily caught."

The Raffles Museum contains specimens from Singapore and

Pahang. There is a specimen from the Batu Caves, Selangor, in the Museum at Kuala Lumpur.

*Distribution.* Siam, Malay Peninsula (Penang, Selangor, Pahang, Malacca, Singapore), Sumatra, Java, Borneo.

100. *NYCTINOMUS PLICATUS* (Buchanan). The Indian Wrinkled-lipped Bat.

*Nyctinomus tenuis*, Cantor, p. 9.

*Nyctinomus plicatus*, Blanf. Faun. Ind., Mamm. p. 354.

Cantor records this species from the Malay Peninsula.

Dobson (Cat. Chir. B. M. p. 425) records specimens from the Malay Peninsula and Singapore.

An interesting account of these bats at Hpapat, Salween, Burma, by Capt. A. R. S. Anderson, appeared in 'Natural Science,' 1899, p. 259, taken from the "Administration Report of the Marine Survey of India, 1897-98."

*Distribution.* India, Burma, Malay Peninsula, Sumatra, Java, Borneo, Philippines.

101. *NYCTINOMUS JOHORENSIS* Dobson. Dato Meldrum's Bat.

*Nyctinomus johorensis*, Dobson, Cat. Chir. B. M. p. 432.

The type specimen was obtained in Johore by Dato James Meldrum. He sent it to Wood-Mason, who presented it to the Indian Museum, 1872. So far as I am aware, this is the only specimen in any collection.

*Distribution.* Malay Peninsula (Johore).

## Order RODENTIA.

### Family SCIURIDÆ.

102. *PTEROMYS ORAL* Tick. The Large Brown Flying-Squirrel.

*Pteromys oral*, Blanf. Faun. Ind., Mamm. p. 361, fig. 122.

"Baang-let" of the Siamese.

While in Siam (Nov. 1898) I was shown the skin of a Flying-Squirrel shot at Prachei (a place between Ayuthia and Korat), which agreed exactly with Blanford's description of this species.

*Distribution.* India, Ceylon, Burma, Mergui Archipelago, Siam.

103. *PTEROMYS PETAURISTA*, Pallas. The Large Malay Flying-Squirrel.

*Pteromys nitidus*, Cantor, p. 44.

*Pteromys nitidus*, O. Thomas, P. Z. S. 1886, p. 73.

"Túpai Térbang" or "Kúbin" of the Malays of the Peninsula (Cantor).

"Tupai Belang" of the Malays (Ridley).

"Grabah" or "Kubin" of the Malays (L. Wray, jun.).

Cantor records this species from Penang, Singapore, and the Peninsula, and says it is "very numerous in the Malayan countries."

It is not strictly nocturnal, for it is frequently seen abroad during the day. It is particularly fond of the Durian, the fruit of *Durio zibethinus*. The Flying-Squirrel has this partiality in common with various other animals, as monkeys, Pteropi and Paradoxuri; nay, the Malays assert, that they have to watch this, their favourite fruit, against tigers."

Horsfield (Cat. Mamm. Mus. East India Co. 1851, p. 162) records a specimen, under the name of *Pteromys melanotis*, from Siam, collected by Dr. G. Finlayson; W. L. Selater (Cat. Mamm. Indian Mus. part ii. 1891, p. 37) also mentions this specimen, and others from Malacca procured by the Rev. F. Lindstedt in 1845.

O. Thomas (P. Z. S. 1886, p. 73) records three specimens collected by Davison, from Klang (Salangor), Malacca, and Gunang Pulai (Johore) respectively, and says "these specimens all belong to the so-called species *Pt. melanotis*."

H. J. Kelsall (J. S. B. R. A. S. no. 26, Jan. 1894), in a list of Mammals from Johore, says presumably of this species:—" *Pteromys oral*, Tick. Red Flying-Squirrel. One specimen obtained at Simpai, on the Batu Pahat Sembrong."

Ridley (Nat. Science, vol. vi. 1895, p. 95) says:—"The red Flying-Squirrel, *Pteromys nitidus*, is still common in Singapore, inhabiting the thicker jungles. It remains quite quiet during the day, but at dusk begins to move about. It climbs with some clumsiness to a high point on a tree, and then dives off to the next, up which it climbs again, and again dives off, and so travels to its feeding ground. It appears to be very fond of coconuts, and will attack any that are near the jungles which it inhabits."

Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 10) records "*Pteromys petaurista* (= *oral*)" from Selangor, and "*Pteromys nitidus*" from Singapore.

In the Museum at Taiping I saw, in May 1898, six large Flying-Squirrels stuffed; two of these are very dark; Mr. Wray has labelled them *P. nitidus*, Malay name "Kubin," they are from Larut. The remaining specimens are very red; two are from Tapah, Batang Padang, and one from Larut; they are labelled *P. petaurista*, "The Taguan," Malay name "Grabah."

In the Museum at Kuala Lampor I saw, in June 1898, two stuffed specimens of *T. petaurista*, both obtained in Selangor; and Mr. A. L. Butler told me there was also a black *Pteromys* found in that neighbourhood, which he considered to be possibly a race of *P. oral*.

I have only once seen a *Pteromys* wild; it was apparently of this species, on Penang Hill, about 1800 feet elevation, on the 11th March, 1899. Just after sunset it passed near me, swooping down hill over the trees (which at this point were not high); we had a good view of it for about 100 yards, when it passed out of sight downhill; its parachute was kept quite steady, and its tail stiff straight out behind.

*Distribution.* Siam, Formosa, Malay Peninsula (apparently generally distributed), Sumatra, Java, Borneo.

104. *PTEROMYS PUNCTATUS* Gray. The Spotted Flying-Squirrel.

*Distribution.* Malacca and Burma (*vide* Blanf. Faun. Ind., Mamm. p. 366).

105. *PTEROMYS TEPHROMELAS* Günth.

O. Thomas (P. Z. S. 1886, p. 74) records two specimens collected by Davison, one from Klang, Selangor, and one from Jaffaria, Johore.

106. *SCIUROPTERUS ALBONIGER* Hodgs. The Parti-coloured Flying-Squirrel.

*Distribution.* "The Himalayas from Nepal eastward, at an elevation of 3000 to 5000 feet. Found also in the hills south of Assam, in Manipur, Yunnan, and Siam. Some skins in the British Museum from Borneo are also referred to this species." (Blanf. Faun. Ind., Mamm. p. 367.)

107. *SCIUROPTERUS SAGITTA* (Linn.). Horsfield's Flying-Squirrel.

*Sciuropterus horsfieldii*, Cantor, p. 45.

*Sciuropterus sagitta*, Blanf. Faun. Ind., Mamm. p. 367.

Of this species Cantor obtained a single skin, from Kedah.

In the Museum at Taiping I saw two specimens from Larut, Perak.

*Distribution.* Burma, Cambodia, Malay Peninsula (Kedah, Perak), Sumatra?, Banka, Java.

Personally, the only place where I have seen *Sciuropterus* alive was on Penang Hill, at about 2200 feet elevation. On the 17th March, 1896, I noticed two grey ones going from tree to tree in bright daylight; and on the 29th March, 1898, I obtained a male specimen near the same spot; I do not know to which species it belongs, the large ears have no pencils of hair at the base.

*Colour.* Above dark grizzled brown, plentifully sprinkled with rich rufous yellow (underfur of back grey, hairs dark brown tipped with rufous yellow). Tail, upper surface nearly uniform dove-coloured brown. Below, very pale lemon-yellow under the head, neck, and body; pale rufous under the parachute; light red under the tail. A dark patch round eye. Cheeks rufous yellow. Nose, chin, and ears pale mouse-colour. The fringe of hair on the anterior margin and corner of the lateral flying-membrane is above rich rufous, and below buff turning to a warm reddish yellow at the edge.

*Size:—*

Head and body .....	188 mm.	about	$7\frac{1}{2}$ inches.
Tail, without hair .....	195	"	$7\frac{3}{4}$ "
Tail, with hair .....	220	"	$8\frac{3}{4}$ "
Hind-foot, without claw ..	34	"	
Ear .....	22	"	
Extent .....	305	"	12 "

108. *SCIUROPTERUS DAVISONI* Thomas. Davison's Flying-Squirrel.

O. Thomas (P. Z. S. 1886, p. 74, pl. vi.) described this species from a specimen collected in Malacca by Davison.

109. *SCIUROPTERUS LEPIDUS* Horsf.

In the Museum at Kuala Lumpur there is a Squirrel from Selangor, which Mr. A. L. Butler tells me is of this species.

110. *SCIUROPTERUS GENIBARBIS* (Horsf.).

Cantor (p. 45) records this species from the Malay Peninsula, and gives the following dimensions of a male :—

Head and body . . . . .	191 mm.	7½ inches.
Tail . . . . .	178 „	7 „

*Distribution.* Malay Peninsula, Java.

111. *RATUFA BICOLOR* Sparrm. The Large Malay Squirrel.

*Sciurus bicolor*, Cantor, p. 38; Blanford, Faun. Ind., Mamm. p. 373.

Cantor says the dark variety is called by the Malays of the Peninsula "Chingkráwah étam," and is very numerous in the forests and hills of Penang and the Malay Peninsula; the light variety is called "Chingkráwah" or "Chingkráwah puteh," and occurs in Penang.

O. Thomas (P. Z. S. 1886, p. 75) records twelve specimens from the Malay Peninsula, from the following localities :—two from Salanga, Junkceylon; one from the Dindings; four from Klang, Selangor; one from Malacca; one from Jaffaria, Johore; and three from Gunong Pulai, Johore. He says: "With the exception of three or four of the cream-coloured examples so common in this species, all these specimens represent the typical black and yellow *S. bicolor*."

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 9) records specimens from Perak, Malacca, and Singapore.

Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 58) says: "*Sciurus bicolor* Sparr. This very variable Squirrel is, in Pahang, usually of a dirty yellowish-white colour, almost tawny on the back. Seen far up the Taban River, and at Pulau Tawar." Also (Nat. Science, vi. 1895, p. 95) he writes:—" *S. bicolor* is a strictly arboreal squirrel, which lives in the tops of the higher trees in the thick jungles. It is very variable in colour. The commonest form in Singapore is black with a cream-coloured belly. In the Peninsula it is usually entirely cream-coloured. It is remarkably docile, but much less active than the smaller species. When eating, this species sits transversely on a bough, grasping it with its hind feet, the head and body hanging down on one side and the tail on the other. It eats fruits of different kinds, and also buds and leaves."

H. J. Kelsall (J. S. B. R. A. S. no. 26, Jan. 1894, p. 16) says:—"This squirrel, which is common in Johor, is here of a dirty

yellowish-white colour, somewhat darker on the back. Specimens were obtained at Kuala Sembrong and Batu Pahat."

The Museum at Taiping contains a specimen of the dark race from Maxwell's Hill, Larut, Perak. Mr. L. Wray tells me this squirrel is known as "The Jeelrang Squirrel," "Chingkrawah Itam," or "Tupai Nanding."

The Museum at Kuala Lumpur contains one dark specimen from Selangor.

The Raffles Museum contains a specimen from Singapore.

In the Siamese Museum we had a specimen from Phrabat.

I saw the dark race of this species in some high jungle-trees near the waterfall, Botanical Gardens, Penang, 1st January, 1896. Also on the 28th March, 1897, a little downstream of Paknam Kabin on the Bangpakong River, Siam, I saw one in a very tall tree: it was black above, pale fawn-colour beneath, had a very big, bushy black tail, and, so far as we could make out with field-glasses, it had *tufted ears*.

*Distribution.* Nipal, Sikhim, Bhutan, Assam, Manipur, Burma, Siam, Malay Peninsula (Junkceylon, Penang, Perak, Dindings, Selangor, Malacca, Pahang, Johore, Singapore), Sumatra, Java, Borneo; Celebes?

## 112. SCIURUS FINLAYSONI Horsf. Finlayson's Squirrel.

*Sciurus ferrugineus*, Blanf. Faun. Ind., Mamm. p. 375.

"Krá rawk khaw" (White Squirrel) of the Siamese.

Horsfield (Cat. Mamm. Mus. East India Co. 1851, p. 154) records a specimen from Siam collected by Dr. G. Finlayson.

This species is very numerous in parts of Siam; the Siamese Museum contained five specimens—a red one from Bangkok, October 1893; a red one from Chantaboon, July 1896; and three white ones without recorded localities. In March 1897 I saw six of the white race in various places on the Bangpakong River between Tahkamen and Kabin, they were all in trees, usually in the jungle. In January 1898 I saw one of the red race in trees in a mangrove swamp near the mouth of the Chantaboon River. In February 1898 we saw very many near Ayuthia, especially in a grove of trees a few miles north of the town; I did not see any on the ground, but always in the trees or clumps of tall bamboo. They were all engaged in love making, males were more numerous than females; they made a good deal of noise, a sort of clucking, rather like the cry of some species of woodpecker. The females have two pairs of mammae. These Ayuthia specimens varied greatly in colour (*v.* O. Thomas, P. Z. S. 1898, p. 245); in all the iris was dark brown, and the bare skin on hands and feet black. In August 1898 I saw one specimen on Klong Morn, a few miles from Bangkok. On the 28th August 1897, at Kosichang, I saw in the woods on Flagstaff Hill about 12 or 15 white squirrels, probably of this species, but apparently smaller and more buff (less pure white) than those I saw on the Bangpakong in March. On the 27th February, 1898, on revisiting the same woods, I saw

many of these squirrels; again they seemed to me smaller than *S. finlaysoni* of the mainland, but they looked pure white: perhaps they are a small island-race.

*Distribution.* Sikhim?, Burma, Siam.

113. *SCIURUS ERYTHRÆUS* Pallas. Pallas's Squirrel.

*Sciurus erythræus*, Blanford. Faun. Ind., Mamm. p. 377.

A stuffed specimen, apparently of this species, in the Siamese Museum, was said to have been obtained locally, which seemed probable, as the Siamese had a name for it—"Krarwak lai," that is, "The Variegated Squirrel."

*Distribution.* Assam, Burma, China?, Siam?

114. *SCIURUS HIPPURUS* Is. Geoffr.

*Sciurus hippurus*, Cantor, p. 41.

"Tupai Jinjang," "Ummu," or "Jau" of the Malays of the Peninsula (Cantor).

Cantor records this species from the Malay Peninsula.

Horsfield (Cat. Mamm. Mus. East Ind. Co. 1851, p. 154) records it from Malacca. O. Thomas (P. Z. S. 1886, p. 75) records three specimens from Klang, Selangor, collected by Davison, saying "This species seems to be the Malay representative of *S. erythræus* Pall., which does not, however, extend further south than Manipur, while Klang seems to be about as far north as *S. hippurus* has been found."

W. L. Sclater (Cat. Mamm. Indian Mus. part ii. 1891, p. 18) records two specimens from Malacca, from R. W. G. Frith, 1844.

In the Museum at Taiping there are several squirrels from the Larut Hills which Mr. Wray considers to be *S. hippurus*; they are about equal in size to *S. prevosti*, but have the back dark ferruginous instead of black, and have no white on the sides.

*Distribution.* Malay Peninsula (Perak?, Selangor, Malacca), Sumatra, Java, Borneo.

115. *SCIURUS CANICEPS* (Gray). The Golden-backed Squirrel.

*Sciurus caniceps*, O. Thomas, P. Z. S. 1886, pp. 68 & 76; Blanford. Faun. Ind., Mamm. p. 380.

O. Thomas (op. cit. p. 76) records seven specimens of *Sciurus caniceps concolor* from "Kussoom, Taroar, Poongah, and Salanga, Junkceylon," collected by Darling. W. L. Sclater (Cat. Mamm. Indian Mus. part ii. 1891, p. 14) records specimens from Perak which "have only a slight tinge of orange on the back, and no cheek-patches, and this form agrees very well with the specimen from Malacca (procured by G. Moxon, 1847), the type of *S. concolor*."

I shot a specimen, subsequently kindly identified by Mr. Thomas, near Gunong Gajah, Kedah, 13th April, 1895. ♂.

*Distribution.* Burma, Malay Peninsula (Junkceylon, Kedah, Perak, Malacca).

116. *SCIURUS GRISEIMANUS* M.-Edw. The Grey-footed Squirrel.

Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59), in a "List of Mammals recorded from Pahang," includes "*Sciurus griseimanus*, A. M.-Edwards," but unfortunately gives no details about it.

*Distribution.* Cochinchina, Cambodia, Upper Burma (Blanf. Faun. Ind., Mamm. p. 381), Laos (O. Thomas, P. Z. S. 1886, p. 68), and Malay Peninsula?

N.B.—*SCIURUS ATRIDORSALIS* Gray. The Black-backed Squirrel.

*Sciurus atridorsalis*, Blanf. Faun. Ind., Mamm. p. 382.

O. Thomas (P. Z. S. 1886, p. 76) records a single specimen from Klang collected by Davison, but says:—"There is possibly some mistake in the labelling of this specimen, as the species is not otherwise known to occur south of Tavoy, Tenasserim, and the specimen exactly matches some of Mr. Davison's Moulmein skins."

Davison (J. S. B. R. A. S. no. 20, 1889, p. 84) says he "obtained one specimen of the common squirrel *Sciurus atrodorsalis*" on Pulo Tioman in August 1889!

*Distribution.* Burma.

117. *SCIURUS MACCLELLANDI* Horsfield. The Striped Himalayan Squirrel.

*Sciurus maclellandi*, Blanf. Faun. Ind., Mamm. p. 386.

In the Museum at Taiping, Perak, there is a stuffed specimen of *S. maclellandi barbei* from Taiping (it is labelled *S. tenuis* Horsf.).

In the Siamese Museum there are two specimens, also of the *barbei* race, from Petchaburi, Siam.

I obtained a single individual in a tree in a wood near Bortong Kabin, 26th March, 1897.

*Distribution.* Sikhim, Eastern Himalayas, Assam, Cachar, Manipur, China, Formosa, Cochinchina, Siam, Tenasserim, Malay Peninsula (Perak, Malacca).

N.B.—Mr. J. L. Bonhote (A. M. N. H. ser. 7, vol. v. p. 53, 1900) distinguishes specimens from Perak as *Sciurus maclellandi leucotis* (Temm.), differing from *S. barbei* in having the light stripes narrow and hair of ear white at base.

118. *SCIURUS TENUIS* Horsfield. The Slender Squirrel.

*Sciurus tenuis*, Cantor, p. 42.

Cantor records this species from Singapore and the Peninsula, and apparently found it rare, only observing two individuals. Horsfield (Cat. Mamm. Mus. East India Co. 1851, p. 154) mentions a specimen from Singapore, collected by Finlayson.

O. Thomas (P. Z. S. 1886, p. 76) records eleven specimens from the Malay Peninsula; they are from Klang and Ulu Langkat in Selangor, from Malacca, from Gunong Pulai in Johore, and from Singapore, and says "these specimens are all very similar, and precisely agree with Horsfield's type."

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 20) records a specimen from Perak, and one from Malacca, collected by A. R. Wallace.

H. J. Kelsall (J. S. B. R. A. S. no. 26, Jan. 1894, p. 16), in a list of Mammals from Johore, says "*Sciurus tenuis*, Horsf. Fairly common. The smallest of the Malayan squirrels."

Ridley (Nat. Science, vol. vi. 1895, pp. 95 & 96) gives an account of the habits of this squirrel, and says it is very abundant and destructive in the Botanic Gardens, Singapore. Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) also records it from Singapore.

*Distribution.* Malay Peninsula (Perak, Selangor, Malacca, Johore, Singapore); "Pulo Panjang in the Gulf of Siam" (W. L. Sclater, o. s. c.), Java, Sumatra, Borneo.

#### 119. *SCIURUS PREVOSTI* Desm. Raffles's Squirrel.

*Sciurus rafflesii*, Cantor, p. 40.

"Tupai B'lang" of the Malays (according to Messrs. Ridley and Wray). Cantor records this species as numerous on the Malay Peninsula.

O. Thomas (P. Z. S. 1886, p. 76) mentions specimens from Klang, Selangor, and Malacca. W. L. Sclater (Cat. Mamm. Ind. Mus. ii. 1891, p. 24) records specimens from Malacca. Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59) mentions this species being common at Kuala Semantan, Pahang, and (Nat. Science, vol. vi. 1895, p. 95) says of it, "one of the most beautiful kinds in the world, is common in the Malay Peninsula, but I never saw it in Singapore." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records this species from Kuala Lumpor and from Pahang. In July 1898 I saw a specimen in the Raffles Museum labelled "*Sciurus rafflesii*, Singapore."

The Museum at Taiping contains specimens from Taiping and Blanja, Perak. Mr. A. L. Butler tells me this species is not uncommon in Selangor; there are several specimens in the Museum at Kuala Lumpor.

*Distribution.* Malay Peninsula (Perak, Selangor, Malacca, Pahang, Singapore?), Sumatra, Java, Borneo, Banka, Billiton, Celebes.

#### 120. *SCIURUS NOTATUS* Bodd. The Malayan Squirrel.

*Sciurus badging*, O. Thomas, P. Z. S. 1886, p. 76.

*Sciurus plantani* of authors.

*Sciurus vittatus*, Cantor, p. 42.

*Sciurus nigrovittatus*, Cantor, p. 42.

? *Sciurus griseiventer*, L. Wray jun., label in Perak Museum.

Cantor records *S. vittatus* from Penang, Singapore, and the Peninsula, and says it is "the most numerous species in the Straits of Malacca," and *S. nigrovittatus* he records from the Peninsula and says it is "not numerous." O. Thomas (P. Z. S. 1886, p. 76) records specimens from Lumut in the Dindings; Jerome, Klang, and Birman in Selangor; Malacca; Gunong Pulai in Johore; and

Singapore ; and makes some very interesting remarks on the coloration of this species. W. L. Slater (Cat. Mamm. Indian Mus. ii. 1891, p. 23) records specimens from Perak and Malacca. Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59), in a "List of Mammals from Pahang," says: "*Sciurus notatus*, Bodd. This is perhaps the commonest of all the Malayan Squirrels. Common everywhere"; and mentions its habits in Nat. Science, vol. vi. 1895, p. 95.

H. J. Kelsall (J. S. B. R. A. S. no. 26, Jan. 1894, p. 16), in a list of Mammals from Johore, says "*Sciurus notatus*, Bodd. This pretty little squirrel is common everywhere." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records this species from Singapore, Johore, Kuala Lumpor, and Pahang.

This is the commonest species both about Taiping, Perak, and Kuala Lumpor, Selangor ; there are several specimens in the local museums at both towns. It also seems the commonest species on Penang Hill ; I obtained a specimen there at 2200 feet elevation.

*Distribution.* Malay Peninsula (Penang, Perak, Dindings, Selangor, Malacca, Pahang, Johore, Singapore), Sumatra, Java, Borneo.

#### 121. FUNAMBULUS BERDMOREI (Blyth). Berdmore's Squirrel.

*Sciurus berdmorei*, Blanf. Faun. Ind., Mamm. p. 387.

During March 1897 I met this squirrel near Tahkamen, on the Bangpakong River, Siam ; three specimens undoubtedly of this species, one in the jungle, two near a village, were seen running on the ground ; two others, apparently of this species, were seen climbing in a clump of bamboo.

In the Siamese Museum there were two specimens labelled "M. Pran, Siam."

*Distribution.* Martaban, Tenasserim, Mergui Archipelago, Siam, Cambodia, Cochinchina.

#### 122. FUNAMBULUS LATICAUDATUS (Diard). Long-nosed Squirrel.

*Sciurus laticaudatus*, Cantor, p. 43.

*Rhinosciurus laticaudatus*, W. L. Slater, Cat. Mamm. Ind. Mus. ii. 1891, p. 30.

Cantor records this squirrel from the Malay Peninsula, gives a description of it, and says it is "apparently not numerous"; he examined five individuals. O. Thomas (P. Z. S. 1886, p. 78) records a specimen from Klang, Selangor. W. L. Slater (Cat. Mamm. Ind. Mus. ii. 1891, p. 30) records a specimen from the Malay Peninsula procured by G. Moxon in 1851. Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59), in a "List of Mammals recorded from Pahang," says "*Sciurus laticaudatus*, Diard. This appears to be a rare species. Kota Glanggi." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 10) under the name of "*Xerus laticaudatus*" records a specimen from Pahang, probably the same as that mentioned by Ridley. A large pale rufous squirrel from Simpang, Perak, in the Museum at Taiping is considered by

Mr. Wray to belong to this species. Mr. A. L. Butler told me he shot two specimens in June 1898 near Kuala Lumpor, a female and a three-quarter-grown young one; the young one has dark rings on the tail, which are absent in the adult.

*Distribution.* Malay Peninsula (Perak, Selangor, Pahang), Borneo.

123. *FUNAMBULUS INSIGNIS* (F. Cuvier).

*Sciurus insignis* F. Cuv.

O. Thomas (P. Z. S. 1886, p. 78) records specimens from Klang in Selangor, and from Jaffaria in Johore. W. L. Sclater (Cat. Mamm. Ind. Mus. ii. 1891, p. 28) records a specimen from Malacca, presented by E. R. Alston. Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59), in a "List of Mammals recorded from Pahang," says: "*Sciurus insignis*, F. Cuv. This is a pretty squirrel with three black stripes down the back. It appears to live almost entirely on the ground. Taban River." Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 10), under the name of *Xerus insignis*, mentions this species from Ulu Pahang.

*Distribution.* Malay Peninsula (Selangor, Malacca, Pahang, Johore), Sumatra, Java, Borneo.

124. *FUNAMBULUS LOCRIA* (Hodgs.). The Orange-bellied Himalayan Squirrel.

*Sciurus subflaviventris*, Horsfield, Cat. Mamm. East India Co. 1851, p. 152.

*Sciurus locria*, Blanf. Faun. Ind., Mamm. p. 376.

Horsfield (*l. s. c.*) mentions a specimen "from G. Finlayson's Collection during Crawford's Embassy to Siam."

*Distribution.* Nepal, Sikhim, Manipur, Arrakan, &c., and probably Siam.

Family MURIDÆ.

125. *HAPALOMYS LONGICAUDATUS* Blyth. Berdmore's Rat.

*Hapalomys longicaudatus*, Blanf. Faun. Ind., Mamm. p. 401.

Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records a specimen from Patani.

*Distribution.* Burma and Malay Peninsula (Patani).

126. *VANDELEURIA OLERACEA* (Benn.). The Long-tailed Tree-Mouse.

*Vandeleuria oleracea*, Blanf. Faun. Ind., Mamm. p. 402.

One specimen, said to have been caught near Chantaboon, was given to me while in Siam; its dimensions in spirit were:—

Head and body	56 mm.	or	2·2 inches.
Tail	95 "		3·68 "
Hind foot	16 "		·63 inch.
Ear	11 "		·43 "

*Distribution.* India, Ceylon, Assam, Yunnan, Burma, Siam.

127. *CHIROPDOMYS GLIROIDES* (Blyth). The Pencil-tailed Tree-Mouse.

*Chiropodomys gliroides*, Blanford. Faun. Ind., Mamm. p. 403.

O. Thomas (P. Z. S. 1886, p. 78) records a mouse from Jaram, Selangor, collected by Darling, which probably belongs to this species.

*Distribution.* Burma, Malay Peninsula (Selangor), Java, Borneo.

128. *MUS RATTUS* LINN. The Common Brown Rat of the East Indies.

*Mus rufescens*, Cantor, p. 46.

*Mus rattus*, Blanford. Faun. Ind., Mamm. p. 406.

"Nu" of the Siamese (a term applied to all species of rats).

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 67) records a specimen of *Mus rattus rufescens* from Malacca, and one from Penang from Cantor's collection. Hanitsch (Rep. Raffles Libr. & Mus. 1887, p. 11) records this species from Singapore.

I have caught this rat in Sepoy Lines, Penang (May 1895), on Penang Hill (Nov. 1896 and March 1898), in Bangkok (April, June, July, Aug., Nov. 1897, and Feb., Aug. 1898), and in Ayuthia (Feb. 1898).

*Colour.* Specimens from Penang Hill: Above reddish brown, with longer dark hairs; beneath pale yellowish, buff, or fawny grey; the two colours gradually shade into each other on the sides.

Specimens from Bangkok: Above reddish brown (varying from bright rufous to yellowish), many of the larger hairs having black tips (most noticeable in adult specimens), base of fur on back grey; beneath pure white (out of about 20 specimens examined, one was yellowish beneath, one male grey, one female rufous grey with a little white on the lower part of the abdomen, one young female rufous grey); the line of demarcation between the darker upper and white lower parts is very noticeable (except in a young female, where they gradually shade into each other); hands and feet flesh-coloured, with short white hairs on their upper surfaces, the white hairs on the last segment of the toes may be longer than the claws.

Females from Penang and from Bangkok had each 5 pairs of mammae.

*Distribution.* Cosmopolitan.

129. *MUS CONCOLOR* Blyth. The Little Burmese Rat.

*Mus concolor*, Blanford. Faun. Ind., Mamm. p. 408.

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 68) mentions a skin from Malacca, collected in 1846. Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records this species from Singapore. The Siamese Museum contained three specimens from Bangkok.

Of this species I obtained three specimens from Penan

Hill, 2200 feet elevation, March 1896; two specimens from Tanglin, Singapore, April 1896; one specimen from Pachim, Siam, March 1897; one specimen from Paknam Menam, Siam, August 1898; and I saw what I believe to be this species at Pakpreo, Siam, in June 1897.

*Colour* of Paknam specimen:—Upper surfaces pale rufous brown, lower surfaces pure white, tail dark above and light below.

*Distribution.* Burma, Siam, Malay Peninsula.

130. *MUS DECUMANUS* Pall. "The Norway Rat."

*Mus decumanus*, Cantor, p. 46; Blanf. Faun. Ind., Mamm. p. 408.

"Tikus" of the Malays (name applied to any species of rat).

Cantor records this species from Penang and the Peninsula; Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records it from Singapore. In Siam I never saw this species alive or trapped it, but three times found dead rats (which appeared to be *M. decumanus*) in Bangkok, in each instance in that quarter of the town where the foreign shipping lies along the wharfs.

In Georgetown, Penang, this species is common; it is rufous brown above, buff below.

*Distribution.* Cosmopolitan.

131. *MUS MUSCULUS* Linn. The Common House-Mouse.

*Mus musculus*?, Cantor, p. 46; Blanf. Faun. Ind., Mamm. p. 413.

"*Tikus ruma*" (*i. e.* house-rat) of the Malays.

Cantor gives habitat "Pinang," and says:—"In colour, this slightly differs from the European mouse, the upper parts being a mixture of shining grey and tawny. The separate hairs are leaden-grey at the base, then tawny with black apex; some are longer and uniformly dark brown. Beneath pale ash. The ears are large, more than one-half the length of the head, with very short hairs, rounded, blackish. Toes, palms, and soles whitish. Tail slender, dark-grey, with very short appressed brown hairs. Length of the head and body, two and five-eighth inches (67 mm.), tail two and four-eighth inches (64 mm.)."

Hanitsch (Rep. Raffles Libr. & Mus. 1897, p. 11) records this species from Singapore. I obtained only three specimens of the Common Mouse, two trapped in houses in Singapore (Jan. & Dec. 1896), and one picked up dead in the bazaar at Chantaboon (Jan. 1898). There were none in the houses in which we lived, in Bangkok, Kedah, or Penang.

Of the second specimen from Singapore, Mr. Oldfield Thomas writes to me:—"Very typical house specimen, with brown metapodials but white fingers and toes, a very characteristic coloration."

*Distribution.* Cosmopolitan.

132. *NESOCIA* sp. inc. Bandicoot Rat.

At least one species of *Nesocia* occurs in the Malay Peninsula,

but what it is we cannot yet say for certain. Cantor seems to have observed two species: one (p. 45) he calls *Mus bandicota*, Bechstein, the other *Mus setifer*, Horsfield. Of the former he gives the Malay name as "Tikus besar" (*i. e.* big rat), and the habitat as "Pinang," and says:—"The larger of two individuals, captured in gardens, measured, head and body, ten and one-eighth inches (258 mm.); the tail seven and four-eighth inches (181 mm.)."

In May 1895 a species of *Nesocia* was common about out-buildings in the barracks in Penang.

Subsequently in April 1898 I trapped more Bandicoots in Georgetown, Penang; they were in colour:—above grey, with very long black hairs giving a very dark appearance; throat whitish buff, remainder of lower surfaces pale grey.

Three skulls and skins I sent to Mr. Oldfield Thomas, who kindly wrote to me they were "allied to *N. bengalensis*—perhaps *N. barclayana*, Anderson."

#### Family SPALACIDÆ.

##### 133. RHIZOMYS BADIUS Hodgs. The Bay Bamboo-Rat.

*Rhizomys minor*, Horsfield, Cat. Mamm. Mus. East India Co. 1851, p. 165.

*Rhizomys badius*, Blanf. Faun. Ind., Mamm. p. 438.

Horsfield (*l. s. c.*) records a specimen from Siam obtained by Dr. G. Finlayson, who says it is called "Thúr" by the Siamese, and adds: "Our specimen is about 6 inches in length, and appears to be a young one. It readily submits to confinement, and is easily tamed. Like most animals of the genus, it is destructive to furniture, to grain, etc., and when suddenly surprised it throws itself upon the offensive, instead of making a precipitate retreat. Its principal food is unhusked rice or other grain, and it is fond of yams, pumpkins, etc., found in forests and woods near to Bamvasor."

*Distribution.* Nepal, Sikhim, Bhutan, Assam, Manipur, Burma, Siam.

##### 134. RHIZOMYS SUMATRENSIS (Raffl.). The Large Bamboo-Rat.

*Rhizomys sumatrensis*, Cantor, p. 47; Blanf. Faun. Ind., Mamm. p. 439.

"Dekan" of the Malays (Wray).

"Woo'n" of the Siamese; also called "Tum."

Cantor records this species from the Malay Peninsula, describes its colour, gives dimensions, and says "In confinement, it is very savage, scarcely tameable." W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 96) records specimens from Malacca and from Alma Estate, Province Wellesley. The Raffles Museum possesses specimens from Malacca. The Museum at Taiping contains specimens from Batu Gajah and from Bukit Gantang, Perak. The Museum at Kuala Lumpur contains several specimens caught in the neighbourhood of that town. There were in the Siamese

Museum three stuffed specimens from Siam of a species of Bamboo-Rat: they had been labelled (probably by the late Dr. E. Haase) *R. badius*, but they looked to me more like the young of *R. sumatrensis*.

*Distribution.* Parts of Burma, Siam, and Malay Peninsula.

#### Family HYSTRICIDÆ.

135. *HYSTRIX LONGICAUDA* Marsden. The Malay Porcupine.

*Hystrix longicauda*, Cantor, p. 48.

"Lándak" or "Bábi Lándak" (*i. e.* pig-porcupine) of the Malays.

Cantor records this species from the Malay Peninsula, and says it "is numerous, and, as it is considered a delicacy by the Chinese population, is frequently brought to market." Ridley (*Nat. Science*, vi. 1895, p. 94) calls this species *Hystrix leucura*, and says of it:—"The Porcupine is still common in Singapore, but a number must be destroyed by the burning of the open country, in which they chiefly live. They are very destructive to the pine-apples." The Museum at Taiping contains a specimen from Larut, Perak. The Museum at Kuala Lumpur contains one young porcupine, apparently of this species, locality unknown but probably from Selangor.

On the 14th Oct. 1897, I bought a live porcupine from a Malay in Singapore, who said it had been caught on Bukit Timah; it soon became tame and an interesting pet. (It is still alive with me, February 1900.)

*Distribution.* Malay Peninsula (Perak, Selangor, Singapore), Sumatra, Java?, Borneo?

In the Siamese Museum there were two stuffed Porcupines, both labelled "Siam," representing apparently two species, but I do not know which: one with a pale brown forehead and a light crest had been labelled by some one "*H. bengalensis*;" the other had no crest, and had an old label "*H. hodgsoni*."

The Siamese call a porcupine "menn."

136. *ATHERURA MACRURA* (Linn.). The Asiatic Brush-tailed Porcupine.

*Atherura fasciculata*, Cantor, p. 49.

*Atherura macrura*, Blanf. Faun. Ind., Mamm. p. 446, fig. 146.

"Lándak" of the Malays.

"Landak-woobi" of the Malays of Selangor (A. L. Butler).

Diard and Duvaucel in 1821 (*Miscell. Papers Indo-China*, 2nd series, vol. ii. p. 208, 1887) speak of this species as "the porcupine of Queda" (*i. e.* Kedah), and say it "always carries its tail lifted up like a trumpet, and makes the tuft at the end tremble." Cantor records this species from Penang and the Peninsula, and says it "is very numerous in the Malayan valleys and hills. In its fretful habits and in its food it resembles the preceding porcupine, like which, it is carried to the markets at Pinang and Malacca, where as

many as twenty to thirty may frequently be seen." W. L. Sclater (Cat. Mamm. Ind. Mus. ii. 1891, p. 104) records a specimen from Malacca. Ridley (Nat. Science, vi. 1895, p. 94) says:—"The Brush-tailed Porcupine (*Atherura macrura*) is not a native of Singapore, so far as is known; it inhabits the limestone caves in Pahang." This probably refers to the animals which Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59), in his "List of Mammals recorded from Pahang," says were "caught in the Kota Glangga caves," but he then called them "*Hystrix longicauda*, Marsden." The Raffles Museum possesses a specimen from Malacca. The Museum at Taiping contains four stuffed individuals from Larut, Perak. The Museum at Kuala Lumpur contains one specimen without locality.

*Distribution.* Burma, Malay Peninsula (Kedah, Penang, Perak, Malacca, Pahang), Sumatra, Java; Borneo?

### Family LEPORIDÆ.

#### 137. LEPUS sp. inc. Hare.

A hare occurs in Siam, but I do not know of what species: I saw one caught alive at Genkoi (between Ayuthia and Korat), 21st November, 1897, and a leveret that had been caught near Chantaboon, January 1898.

### Order PROBOSCIDEA.

#### Family ELEPHANTIDÆ.

#### 138. ELEPHAS MAXIMUS L. The Indian Elephant.

*Elephas indicus*, Cantor, p. 52.

*Elephas maximus*, Blanf. Faun. Ind., Mamm. p. 463; S. Flower, Journ. Bombay N. H. S. vol. xi. no. 2, p. 335 (1897).

"Gajah" of the Malays.

"Chang" of the Siamese.

In the Royal Siamese Museum there was a life-size model of a male Siamese Elephant, and a most magnificent collection of about seventy tusks, all, so far as I could ascertain, from Siam; forty of these tusks are over 4 feet 8 inches (1420 mm.) in length.

The Selangor Museum contains six or seven skulls of local elephants.

Wild elephants do not occur in either Penang or Singapore, nor are tame ones employed there; but on the continent, both in Siam and the Malay Peninsula, elephants are found wild in suitable localities, and are trained for various purposes. Personally I only once came on wild elephants, a party of four, near the Bangpakong River, in March 1897; but in June 1897 we observed over a hundred wild ones caught in the Kraal at Ayuthia. I saw more or less trained elephants in Bangkok, Ayuthia, Chantaboon, Kedah, and Perak, but in the Southern Malay States the people do not seem to catch and tame them. H. J. Kelsall (J. S. B. R. A. S. no. 26,

Jan. 1894, p. 17) says: "The elephant appears to be common throughout Johore. Tracks were seen in many places on the Indau, and also on the Sembong, near P'ngkalan Repoh especially." Ridley (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59) says: "The elephant, though common all through Pahang, is never caught and tamed. Abundant in the Tahan woods;" and (Nat. Science, vol. vi. 1895, p. 162) remarks that "it is not excessively abundant, but is plentiful in many parts of the Peninsula."

*Distribution.* India, Burma, Siam, Malay Peninsula, Sumatra, and Borneo.

### Order UNGULATA.

#### Family RHINOCEROTIDÆ.

Malay name for Rhinoceros, "Badak" (the final "k" not pronounced in most parts of the Peninsula).

Siamese name for Rhinoceros, "Rat."

A good deal of uncertainty exists as to how many species of Rhinoceros inhabit this region, and which they are, and it is difficult to obtain information; they are poorly represented in the local Museums—partly because almost all parts of the rhinoceros are highly prized by various natives of Asia; and I have been told that it is more profitable for a Malay, if he happens to catch one of these animals in a pitfall, to kill it and sell the remains to the Chinese, than to sell the whole animal to a European.

The only specimens of Rhinoceros in the Perak Museum (May 1898) were three hornless skulls without localities labelled *R. lasiotis*, *R. sumatrensis*, and *R. sondaicus* respectively. In the Selangor Museum (July 1898) there was a single unlabelled skull. The Raffles Museum (1898) had only a skeleton, labelled *R. sumatrensis* without locality. In the Siamese Museum we had a splendid series of over sixty separate, detached horns of Rhinoceros, some of remarkable shapes, but unfortunately their localities are not known. In February 1897 we acquired a specimen of *R. sondaicus*, which we skinned and stuffed. As an instance of how rhinoceros products are valued, I may mention that to skin this animal we had any number of eager volunteers, mostly Siamese women, who in return for the work of removing the skin only wanted to have some of the blood. The rhinoceros was skinned in an old Palace Garden in Bangkok under my directions; it was an extraordinary sight as we hurried to get it done before dark—a crowd of women, mostly clad only in a "panung" (Siamese loin-cloth), smeared with blood from head to foot, working away at the carcass with knives and fingers, little children collecting the blood in cocoanut-shells and running off with it to their homes, and Siamese men hanging round trying to get any of the flesh they could; it was very difficult to save the skeleton, several of the bones being snatched up and nearly carried off by these loafers.

Cantor (p. 54) says that *Rhinoceros unicornis* and *R. sondaicus* "appear to be numerous on the Malayan Peninsula;" and adds

(p. 55) "a *two-horned* Rhinoceros is stated by the Malays to inhabit, but rarely to leave, the densest jungle," which he expects to be *R. sumatrensis*. Unfortunately he does not mention seeing any local specimens, or give any details of why he includes *R. unicornis* in his list.

Personally I have never seen even the tracks of a wild rhinoceros. At Alor Star, Kedah, the Malays told me no rhinoceros was known in that district, which is mostly flat; they looked on it as an animal only inhabiting the mountains. An Englishman once told me he had seen tracks of rhinoceros on Gunong Jerai (Kedah Peak) at several thousand feet above the sea. In Perak, English friends have told me, rhinoceroses were not uncommon till three or four years ago in the Larut Hills *above* four thousand feet. In the south of Perak, however, a friend told me he had once seen a rhinoceros in a swamp, it was reddish in colour. The 'Bangkok Times' for 11th Nov., 1897, mentions a rhinoceros being shot by Mr. C. Ephraums: unfortunately this account, as usual, does not say to what species the animal belonged and gives but few details—the rhinoceros was "seen at a sulphur spring within six miles of Ipoh," Perak: it "was an old male, stood 6 feet high at the shoulder and about 8 feet in length; his 'Sumbu,' or horn, measured 13 inches and weighed 3 lbs."

Mr. Ridley told me that in 1896 he saw a rhinoceros in the Dindings; and (J. S. B. R. A. S. no. 25, Jan. 1894, p. 59) he mentions having seen tracks of some species of rhinoceros in the Tahan River woods, Pahang, where he also heard the animal at night.

Mr. T. ff. Carlisle, H.B.M. Consular Service, writing to me from Baw Yakar, Pailin, Battambang Province of Siam, 4th Feb., 1899, says "I have met an old Shan hunter here who has shot both the one-horned and the two-horned rhinoceros."

139. RHINOCEROS SONDAICUS Cuv. The Smaller One-horned Rhinoceros.

*Rhinoceros sondaicus*, Blanf. Faun. Ind., Mamm. p. 474, fig. 155 (p. 475).

A young female, just dead, was brought to the Siamese Museum on the 10th Feb., 1897, which I was told had been brought from the Laos Country, and had died on reaching Bangkok. There was no horn. Colour uniform dusky grey. Only one pair of incisors showed through the gums in the lower jaw, they were tusk-like; none showed in the upper jaw, the gum forming a hard pad in the place where the incisors of a horse would be.

Ridley (Nat. Science, vi. 1895, p. 161) says *R. sondaicus* appears to be the common rhinoceros of the Malay Peninsula. "It frequents the hill-jungles, ascending to 4000 feet altitude, and seems usually to move about at night, though one may come upon it by day. It has a habit of constantly using the same track, and dropping its dung in the same place daily, a habit common also to the tapir. As the jungle gets cleared, it wanders often into the

low, open country, apparently losing its way. It is a quiet, inoffensive beast."

*Distribution.* Sundarbans, parts of Eastern Bengal, Sikhim Terai, Assam, Burma, Siam, Malay Peninsula, Sumatra, Java, Borneo.

140. RHINOCEROS SUMATRENSIS Cuv. The Asiatic Two-horned Rhinoceros.

*Rhinoceros sumatrensis*, Blanf. Faun. Ind., Mamm. p. 476.

The "Bada Api" or "Fire Rhinoceros" of the Malays is probably a red variety of this species.

Slater (Tr. Z. S. ix. p. 651, 1875) mentions a rhinoceros of this species "captured in the Sunghi-njong (presumably Sungei-Ujong) district of Malacca," and says other specimens "from the same district or the neighbouring territory of Johore were imported into Europe."

W. L. Slater (Cat. Mamm. Ind. Mus. ii. 1891, p. 205) records specimens from Malacca.

Mr. A. L. Butler in a letter to me, from Kuala Lumpur, dated 25th Oct., 1898, says:—"I went to see a big rhinoceros in a pitfall the other day at Rantan Panjang. A fine big female *R. sumatrensis*, a dark reddish-brown beast, 4 feet 3 inches at shoulder (measured with a standard) and about 8 feet to 9 feet in length (guessed). The great thing that struck me was her extraordinary tameness. She had only been caught three days, but fed readily from one's hand, and seemed to enjoy being scratched."

*Distribution.* Assam, Tenasserim, Siam, Malay Peninsula, Sumatra, Borneo.

#### Family TAPIRIDÆ.

141. TAPIRUS INDICUS Cuv. The Malay Tapir.

*Tapirus malayanus*, Cantor, p. 55.

*Tapirus indicus*, Blanf. Faun. Ind., Mamm. p. 478.

"Badak tampong" (*i.e.* Piebald Rhinoceros) of the Malays in Kedah and Perak.

Bádak," "Kúda Ayer," and "Tennú" of the Malays of the Peninsula, *apud* Cantor.

"Tenok" of the Malays, *apud* Ridley.

Cantor mentions specimens from Province Wellesley and Kedah. W. L. Slater (Cat. Mamm. Ind. Mus. ii. 1891, p. 198) records two specimens from Malacca, obtained in 1820 and 1848.

Ridley (J. S. B. R. A. S. no. 25, p. 59) says tracks of the Tapir were seen near Temerloh, Pahang, and (Nat. Science, vi. 1895 pp. 161, 162) mentions the supposed protective coloration of the young.

There are specimens from Larut in the Museum at Taiping, and from Malacca in the Raffles Museum.

H.H. the Rajah Mudah of Kedah told me (June 1898) that the Tapir is not uncommon in the swamps of Kedah, within a day's

journey of Alor Star. Mr. F. H. Malcolm Staples told me (Sept. 1897) that the Tapir is still sometimes met with about Batu Pahat, Johore.

On the 25th July, 1898, I saw a young Tapir alive in Bangkok: it had been brought from the Malay Peninsula, from between Kedah and Singora; it was kept in the King of Siam's menagerie, and died about 6th August, 1898.

*Distribution.* Tenasserim, Lower Siam, Malay Peninsula, Sumatra.

#### Family BOVIDÆ.

142. *BOS GAURUS* Ham. Smith. The Gaur or S'ladang.

*Bos gour*, Cantor, p. 64.

*Bos gaurus*, Blanf. Faun. Ind., Mamm. p. 484, fig. 159 (p. 488).

"Kating" of the Siamese (both *B. gaurus* and *B. sondaicus* seem included in this name).

"Sápi útan" (*i. e.* Cattle of the Woods) of the Malays of the Peninsula, *apud* Cantor.

"S'ladang" of the Malays.

W. L. Sclater (Cat. Mamm. Ind. Mus. 1891, p. 125) records a skull and horns from Malacca from Dr. Maingay, 1863. Ridley (J. S. B. R. A. S. no. 25, 1894, p. 59) says: "The S'ladang is to be met with all through the Pahang jungles, but, owing to its shy and retiring habits, is difficult of approach. Tahan woods and all down Pahang River."

In the Museum at Taiping there are horns from Batang Padang, Perak, and many fine heads from Pahang shot by Mr. C. F. W. Curtis. In the Museum at Kuala Lumpur there are a stuffed bull and numerous heads shot by the late Captain H. C. Syers in Selangor. The Raffles Museum contains a skull from Ulu Pahang presented by Mr. W. Bertrand Roberts.

Mr. W. Sinclair told me in Jan. 1898 that there are wild cattle, probably of this species, in the hill-jungle at the back of Anghin, Siam.

A pair of horns, apparently of this species, from near Raheng, Siam, measured in length 24 inches, and in circumference at the base 17 inches.

Mr. A. J. A. Jardine, Inspector General of Police, Bangkok, told me he had found a Gaur killed by wild dogs near Shagan Salween River, Burma.

*Distribution.* Parts of India, Assam, Burma, Siam, Malay Peninsula; Cochinchina?

143. *BOS SONDAICUS* Müll. & Schleg. The Banting or Tumbaadu.

*Bos sondaicus*, Blanf. Faun. Ind., Mamm. p. 489.

"Kating" of the Siamese.

"Sapi-utan" of the Malays.

In March 1897 I saw detached horns, apparently of this species,

in the Governor's house at Pachim, Siam ; they were said to have been obtained in that province.

The Banting is probably very rare in the Malay Peninsula : Mr. H. N. Ridley told me one was killed by Mr. Oxley at Muar about fifty years ago ; Mr. J. Rodger, C.M.G., has in his possession a single horn, apparently of this species, obtained from a Sakei ; and both Mr. Ridley and Mr. A. L. Butler tell me one was killed recently in Perak.

*Distribution.* Burma, Siam, Malay Peninsula, Java, Bali, Borneo, and Sumatra ?

144. *BOS BUBALUS* Linn. The Buffalo.

*Bubalus arnee*, Cantor, p. 65.

*Bos bubalus*, Blanf. Faun. Ind., Mamm. p. 491.

" Khwai " of the Siamese.

" Karbau " of the Malays.

Cantor says :—" The wild Buffalo is reported, but apparently without proof, to be indigenous in the Malayan Peninsula. Domesticated it is very plentiful." Ridley (J. S. B. R. A. S. no. 25, 1894, p. 59) says it is very doubtful if the Buffalo occurs in a wild state in Pahang.

I was told, on good authority, that there are Buffaloes near Pailin, in Siam, descendants of some that ran wild about fifty years ago.

*Distribution.* Wild in parts of India and Ceylon. Wild or feral in parts of Burma, Siam, and the Malay Peninsula. Domesticated in Egypt, Italy, Southern Asia, and the Malay Islands.

145. *NEMORHÆDUS SUMATRENSIS* (Shaw). Goat-Antelope.

*Nemorhedus sumatrensis*, Cantor, p. 64.

*Nemorhædus sumatrensis*, Blanf. Faun. Ind., Mamm. p. 514.

" Leea'ngpah " or " Ooarpah " of the Siamese.

" Kambing útan " or " Kambing gran " of the Malays.

" Black Mountain-goat " of the English in the Straits Settlements.

Cantor says " it appears to be numerous on the Malayan Peninsula, but exceedingly difficult to obtain, as it frequents the steepest hilly localities, and is very shy and active."

W. L. Sclater (Cat. Mamm. Indian Mus. ii. 1891, p. 151) records a skull from Province Wellesley.

Ridley, writing on the Mammals of Pahang (J. S. B. R. A. S. no. 25, 1894, p. 60), remarks : " This wild goat is supposed to occur in the high mountains of the interior, but there is no record of its having been obtained " ; and (Nat. Science, vi. 1895, p. 163) says it " inhabits the isolated patches of limestone rocks which flank at intervals the main granite chain of the Peninsula. Though apparently not rare in these places, it has never been shot by any sportsman."

In the Museum at Taiping there is a stuffed head from near

Kuala Kangsar, Perak, and a complete skeleton and two pairs of horns, all, I understand, from Perak. In the Museum at Kuala Lumpur there are several frontlets and horns, without locality.

Mr. A. L. Butler told me he saw a Goat-Antelope in March 1898 near "the Cottage" in the Larut Hills, Perak, at an elevation of about 4000 feet; and in a letter, dated 14th March, 1899, mentions Sir Frank Swettenham as having shot one in the Perak Hills. This is the first instance, to my knowledge, of one of these animals being shot by a European sportsman in the Peninsula, though many have tried. In another letter, dated 5th November, 1899, Mr. Butler tells me he has examined three specimens, and says "the *Nemorhædus* of the Peninsula is not *N. sumatrensis*, having legs black instead of rufous."

The Siamese Museum possesses a stuffed female from the Laos country, each horn 7·8 inches (198 mm.) in length, and a frontlet without locality, each horn 7·4 inches in length. A frontlet from the hills between Raheng (Siam) and Burma was shown me by Mr. J. Harper: length of horns 7·75 inches, circumference of horns at base 5·25 inches; a horn in my possession from Perak is 6·15 inches in length, and 4·5 inches in circumference at base.

In July 1898, a live goat of this species was exhibited in Bangkok, but I was unable to find out where it had been caught; it was a very handsome animal, nearly black in colour.

*Distribution.* Eastern Himalayas, Moupin, Yunnan, Assam, Burma, Siam, Malay Peninsula, Sumatra.

#### Family CERVIDÆ.

146. *CERVULUS MUNTJAC* (Zimm.). The Kakar, or Barking Deer.

*Stylloceros muntjac*, Cantor, p. 61.

*Cervulus muntjac*, Blanf. Faun. Ind., Mamm. p. 532, fig. 173.

"Kijang," "Kidjang" "Kidang," or of the Malays.

Recorded from Kuala Tahan, Pahang, by Ridley (J. S. B. R. A. S. no. 25 1894, p. 60), who (Nat. Science, vi. 1895, p. 164) says:—"The Kijang does not occur now in Singapore, if it ever did. It is abundant in many places, such as the slopes of Mount Ophir, and is often shot by planters and others in and about the coffee plantations." This species is kept in the Singapore Botanical Gardens, where it breeds.

There are specimens from Upper Perak in the Museum at Taiping, and from Selangor in the Museum at Kuala Lumpur.

Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 7) mentions a young *C. muntjac*, 24 hours old, "showing clearly the white longitudinal striations, which soon disappear in older animals."

The Kijang occurs in Siam. There is a pair of antlers in the Siamese Museum, presumably local, the length from burr to tip is 4·25 inches; and Mr. N. Kelly Passmore gave me the skull of one which had been shot by his overseer near Muok Lek, about

900 feet elevation, in the Dong Phya Fai: the right antler from burr to tip measured along the curve 6·5 inches, the left 6·75 inches (171 mm.). A deer we saw and heard on the Bangpakong River in March 1897 was probably of this species, though I failed to procure a specimen.

*Distribution.* India, Ceylon, Burma, Siam, Cambodia, Hainan, Malay Peninsula (Perak, Selangor, Malacca, Pahang), Sumatra, Java, Lombok, Borneo.

147. *CERVUS SCHOMBURGKI* Blyth. Schomburgk's Deer.

"Qua-an" of the Siamese.

*Distribution.* Parts of Siam.

148. *CERVUS ELDI* Guthrie. The Thameng.

*Panolia acuticornis*, Cantor, p. 64.

*Cervus eldi*, Blanf. Faun. Ind., Mamm. p. 541, fig. 176.

"Sam-an" of the Siamese.

Cantor says "A single skull of a stag, killed in Keddah, has the horns so like those of the Munneepore animal, that the species might be taken to be identical, but that the Malays assert theirs to be maned, and of a dark colour, with white spots, like the *Axis*. This stag is further described as being extremely wary, and therefore seldom seen but on heights inaccessible to man." H.H. the Rajah Mudah of Kedah, who is keen on shooting, told me the Thameng does not exist in Kedah; antlers are sometimes conveyed there from Siam, a pair of which probably were brought to Cantor, with imaginary details to enhance their value, the statement that they frequent "heights inaccessible to man" being alone suspicious in regard to this plain-dwelling species.

W. L. Selater (Cat. Mamm. Indian Mus. ii. 1891, p. 181) records a frontlet of this species supposed to have been "brought from Penang" in 1846; this may have been imported from Siam, *via* Singora and Kedah.

Mr. H. Warington Smyth ('Five Years in Siam,' vol. ii. p. 217) says the plain round Battambang "is much frequented by herds of the *Lamang*, or *Eld's* Deer," and describes how the Cambodians capture them.

*Distribution.* Manipur, Burma, Siam, Cambodia, Hainan.

149. *CERVUS UNICOLOR* Bechstein. The Sámbar.

*Rusa equina*, Cantor, p. 63.

*Cervus unicolor*, Blanf. Faun. Ind., Mamm. p. 543, fig. 177 (p. 544).

"Nua" of the Siamese.

"Rusa" of the Malays.

Cantor records the *Rusa* from the Malay Peninsula and Penang; so far as I have been able to ascertain, it is now extinct in Penang, and has been so for the last 25 or 30 years. H. J. Kelsall

(J. S. B. R. A. S. no. 26, 1894, p. 17) says:—" *Cervus equinus*, Cuv. Tracks of the Sambhur were seen on Gunong Janeng. This deer is probably common in the Johore jungles, but owing to its shy nature is seldom seen." Ridley (J. S. B. R. A. S. no. 25, 1894, p. 60) records this species from Pahang, observing: "The Malayan Sambur, apparently the same as the Indian species, but the horns do not attain the same length"; and (Nat. Science, vi. 1895, p. 164) says:—"The *Cervus equinus* is common in the Peninsula, and a few still occur in Singapore; . . . the young are produced singly, and are coloured like the adult, but with much softer hair. There are, however, faint traces of light spots on the rump, which disappear after the first week"<sup>1</sup>. Writing to me on 11th Sept., 1899, Ridley says: "Sambar breed regularly in the Singapore Gardens, and they also breed in Government House Park. The young usually have a couple of white spots on the sides near the rump, not very distinct. They are not fully spotted like Axis. I should say certainly that the Sumatran deer is a distinct animal, *Cervus hippelaphus*. It would not cross with the other deer" (*i. e.*, Peninsula Sambar). In the Museum at Taiping there is a stuffed female from Upper Perak, and antlers from Upper Perak, Batang Padang, and Larut. In December 1896 I saw a Sambar stag in a small patch of jungle within about a mile of the town of Taiping. In the Museum at Kuala Lumpur there are specimens from Selangor. The Sambar appears to be numerous in parts of Siam; we had a stuffed female and two pairs of antlers in the Siamese Museum.

*Distribution.* India, Ceylon, Assam, Burma, Siam, Hainan, Malay Peninsula; probably also parts of China, Formosa, Philippines, Borneo, and Sumatra.

#### N.B.—*CERVUS AXIS* Erxl. The Chital, or Spotted Deer.

*Axis maculata*, Cantor, p. 62.

*Cervus axis*, Blauf. Faun. Ind., Mamm. p. 546.

Cantor says this deer is called "Rúsa Búnga" by the Malays of the Peninsula, and "It is numerous in Keddah, and at present in Pinang. But it did not inhabit Prince of Wales' Island (*i. e.* Pinang) till one of the last Governors of the late Presidency took the trouble of importing from Bengal some pairs, which were kept in the park adjoining Government House (Suffolk House). When the Presidency of Prince of Wales' Island was abolished, the deer of the quondam Governor's park found their way into the jungle, where they have multiplied to a prodigious extent." Nowadays they have disappeared from Penang, and it seems Cantor must have been mistaken in recording them from Kedah; the local Malays assured me no spotted deer existed there.

<sup>1</sup> A Sambar born in 1899 in the Ghizeh Zoological Gardens (original locality of parents unknown) had at first a very distinct black vertebral line from between the ears to the tail.

150. *CERVUS PORCINUS* Zimm. The Para, or Hog-deer.

*Cervus porcinus*, Blanf. Faun. Ind.. Mamm. p. 549, fig. 179 (p. 550).

The Siamese Museum contains two stuffed males, obtained in Siam, but the exact locality I was not able to discover.

*Distribution.* Parts of India, Ceylon, Burma, Siam, and Laos States of Cambodia (R. Ward, 'Records Big Game,' 1899, p. 71).

#### Family TRAGULIDÆ.

151. *TRAGULUS JAVANICUS* (Gmel.). The Smaller Malay Mouse-deer.

*Tragulus kanchil*, Cantor, p. 60; O. Thomas, P. Z. S. 1886, p. 17.

*Tragulus javanicus*, Blanf. Faun. Ind.. Mamm. p. 556.

"Kra-chong" of the Siamese.

"Kanchil" or "Pelándok" (pronounced "Plando") of the Malays.

Cantor says this "species is astonishingly numerous" and occurs in the Malay Peninsula, Penang, Singapore, and the Lencary Islands; he adds "In Prince of Wales' Island (*i.e.* Penang) any number may be procured within short notice, at the rate of one Spanish dollar per dozen."

Oldfield Thomas (*l. s. c.*) records specimens from Salanga, Junkceylon, from Taroar, from Klang, Selangor, and from Singapore Island.

Ridley (J. S. B. R. A. S. no. 25, 1894, p. 60) records this species from Pahang.

There are specimens from Larut in the Museum at Taiping, and from Selangor in the Museum at Kuala Lumpur. Hanitsch records it from Changi, Singapore (Rep. Raffles Libr. & Mus. 1898, p. 9).

This species occurs in Siam; there is a specimen from the Dong Phya Fai in the Siamese Museum; and A. Milne-Edwards ('Recherches Famille Chevrotains,' Paris, 1864, p. 78) says "en 1862, M. Bocourt en a rapporté au Muséum un individu du royaume de Siam, et le Musée britannique en possède un exemplaire provenant du Camboge."

*Distribution.* Tenasserim, Siam, Cambodia, Cochinchina, Malay Peninsula (Junkceylon, Lencary, Penang, Perak, Selangor, Pahang, Singapore), Sumatra, Java, Borneo.

152. *TRAGULUS NAPU* (F. Cuv.). The Larger Malay Mouse-deer.

*Tragulus javanicus*, Cantor, p. 61.

*Tragulus napu*, Blanf. Faun. Ind.. Mamm. p. 557.

"Nápu" of the Malays.

Cantor records this species from the Malay Peninsula, where he says it "appears to be far less numerous than the preceding."

W. L. Slater (Cat. Mamm. Ind. Mus. ii. 1891, p. 191) records two specimens from the Malay Peninsula, obtained in 1871 and 1872.

Ridley (J. S. B. R. A. S. no. 25, 1894, p. 60) records this species from Pahang, and (Nat. Science, vi. 1895, pp. 163, 164) says this is the commonest species of Mouse-deer in the Peninsula, and gives an interesting account of its habits in confinement and of native methods of catching it. There are specimens from Larut in the Museum at Taiping, and from Selangor in the Museum from Kuala Lumpur.

*Distribution.* Tenasserim, Malay Peninsula (Perak, Selangor, Pahang), Sumatra, Java, and Borneo.

N.B.—*TRAGULUS STANLEYANUS* Gray. Stanleyan Chevrotain.

W. L. Slater (Cat. Mamm. Ind. Mus. part ii. 1891) records two specimens from the Malay Peninsula, obtained in 1870. This species is by some supposed to occur in Singapore, perhaps from a statement by A. Milne-Edwards: "Un individu né le 25 septembre 1862, à Singapore, de Chevrotains de Stanley achetés par M. Bocourt pour le Muséum" ('Recherches Famille Chevrotains,' p. 81, Paris, 1864). I do not know the real habitat of this species, but have been told that it occurs in the Dutch islands south and south-east of Singapore, and is imported into Singapore from Rhio.

#### Family SUIDÆ.

153. *SUS CRISTATUS* Wagner. The Indian Wild Boar.

*Sus indicus*, Cantor, p. 53.

*Sus cristatus*, Blanf. Faun. Ind., Mamm. p. 560.

"Mu" of the Siamese.

"Babi utan" of the Malays.

Cantor records wild swine from the Malay Peninsula, Penang, Singapore, and the Lancy Islands. Ridley (J. S. B. R. A. S. no. 25, 1894, p. 60) says wild pig are common in the low country of Pahang, and were also seen far up the Tahan; and (Nat. Science vi. 1895, p. 161) records them from the island of Singapore, where he says they are "far too abundant."

There are local specimens in the Museums at Taiping, Kuala Lumpur, and Singapore.

In 1896 wild pigs were still to be found in both Penang and Singapore. In 1897 I saw one that had been killed the day before near Gunong Pulai, Johore; I was doubtful whether it was *S. cristatus* or not, owing to the greatly elongated facial portion of the skull, which unfortunately I could not bring away, my companions being Mahomedans, and I having too many other things to carry myself. In June 1898 I saw two wild pigs in swamps beyond Jenan, Kedah; apparently the ordinary *S. cristatus*.

*Distribution.* India, Ceylon, Burma, Lower Siam, Malay Peninsula.

## Order CETACEA.

## Family BALÆNIDÆ.

## 154. MEGAPTERA BOOPS. Humpbacked Whale.

Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9) says there is an incomplete skeleton of this species from Malacca in the Raffles Museum. I believe it was obtained in October 1891.

## Family DELPHINIDÆ.

## 155. PHOCÆNA PHOCÆNOIDES (Cuv.). The Little Indian Porpoise.

*Phocæna phocænoides*, Blanf. Faun. Ind., Mamm. p. 574, fig. 187 (p. 575).

Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9) records "*Neomeris phocænoides*" from Singapore. In the Museum at Taiping there is a stuffed specimen caught off Matang, Perak, about 46 inches (say 1168 mm.) in total length, apparently of this species.

*Distribution.* Indian Ocean, from Cape of Good Hope to Japan (Blanf. *op. cit.* p. 575).

## 156. ORCELLA BREVIROSTRIS (Owen). The Larger Indian Porpoise.

*Orcella brevirostris*, Blanf. Faun. Ind., Mamm. p. 571, fig. 189.

"Lomba-lomba" of the Malays.

The British Museum contains a stuffed specimen from Singapore (Flower, List of Cetacea, 1885, p. 17), from whence it is also recorded by Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9). In the Museum at Taiping there is a stuffed specimen, caught off Matang, Perak, about 60 inches (say 1524 mm.) in total length, apparently of this species.

*Distribution.* Bay of Bengal, Singapore, North Borneo.

## 157. STENO PLUMBEUS (Dussum.). The Plumbeous Dolphin.

*Steno plumbeus*, Blanf. Faun. Ind., Mamm. p. 583.

Cantor (p. 66) says *Delphinus plumbeus* occurs on the coasts of Penang, is called "Parampúan Laut" by the Malays of the Peninsula, and "the species, although very numerous, and rather heavy in its movements, is rarely captured, except by chance in fishing stakes."

In the Museum at Taiping there are three stuffed specimens, from the coasts of Perak, probably of this species; the largest is about 78 inches (say 1980 mm.) in total length.

*Distribution.* Indian Ocean.

## 158. DELPHINUS DELPHIS L. The Common Dolphin.

*Delphinus delphis*, Blanf. Faun. Ind., Mamm. p. 587, fig. 182.

Recorded from Singapore by Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9).

*Distribution.* "Probably all tropical and temperate seas" (Blanford).

Dolphins are numerous on both sides of the Malay Peninsula and in the Gulf of Siam. I have from time to time seen three, apparently different species, but have never managed to secure any specimens; one of these is *D. delphis*, one a smaller species, and one larger than *D. delphis*, with a very prominent dorsal fin.

Local sailors report seeing a "white porpoise" at Belawan Deli, on the east coast of Sumatra, and at the mouths of several rivers in the Straits of Malacca.

## Order SIRENIA.

### Family MANATIDÆ.

#### 159. HALICORE DUGONG (Erxl.). The Dugong.

*Halicore indicus*, Cantor, p. 66.

*Halicore dugong*, Blanf. Faun. Ind., Mamm. p. 594, fig. 196.

"Dúyong" or "Parampúan Laut" of the Malays of the Peninsula, *apud* Cantor.

I have in my possession a beautifully finished pencil drawing of "A young male Dūyōng taken in the neighbourhood of Singapore in April 1837. Measuring in length from the tail to the nose on the back 7 ft. 4 in. A Commander of a Portuguese ship trading to China says that in Portuguese this Fish or Animal is called 'Pexi Mulher' (literally Woman Fish)—he had seen them at Palaos in the Pacific. The bones of the jaws, the top of the scull and the throat are much esteemed there, especially those of the jaws which are of value and used as ornaments by the Natives, who are Savages." This note and the drawing are unsigned, but are stamped "Pinang, 4 Ja. 1838, Post-Office."

Cantor says: "The Duyong appears not to be numerous at Singapore, still less so to the Northward, and has but in few instances been observed in Kwála Múda, the mouth of the river, which forms the northern boundary of Province Wellesley."

Horsfield (Cat. Mamm. Mus. East India Co. 1851, p. 139) records a Dugong's skull "from Finlayson's Collection, Siam."

Ridley (Nat. Science, vi. 1895, p. 165) says "The Dugong is tolerably common in the Strait between Johore and Singapore; but one does not often see it," and gives some information about it.

Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9) records a specimen from Malacca. In July 1898 I saw one in the Raffles Museum labelled Singapore.

Mr. L. Wray told me in 1896 he believed the Dugong was not found on the coast of Perak, probably owing to the lack of seaweed.

*Distribution.* Shores of the Indian Ocean, Straits of Malacca, and coasts of Borneo.

Order **EDENTATA.**Family **MANIDÆ.**

160. **MANIS JAVANICA** Desm. The Malay Scaly Anteater.

*Manis javanica*, Cantor, p. 51; Blanf. Faun. Ind., Mamm. p. 599, fig. 199 (p. 600).

"Nim" of the Siamese.

"Pengóling" or "Pangolin" of the Malays, according to authors.

"Tangíling" of the Malays.

Cantor records the *Manis* from Penang and the Peninsula, and says:—"Although numerous in rocky situations, is not often captured, as it is seldom abroad till after sunset. The largest male measured from the apex of the nose to the root of tail one foot nine and a half inches (546 mm.); the tail one foot eight inches (508 mm.)." Ridley (J. S. B. R. A. S. no. 25, 1894, p. 60) records it from Pramau, Pekan, in Pahang; and (Nat. Science, vi. 1895, p. 165) says: "It is frequently found in open sandy country, making large burrows in the ground," and remarks on its habits. In the Museum at Taiping there are several specimens from Larut, Perak, and in the Museum at Kuala Lumpor specimens from Selangor. Hanitsch (Rep. Raffles Libr. & Mus. 1898, p. 9) records this species from Singapore. There were three specimens from Siam in the Museum at Bangkok, the largest, as stuffed, was 3 feet 4½ inches (say 1028 mm.) in total length.

In April 1896 I saw a female and young one alive in Penang, said to have been just caught in the hills on the island. Mr. F. H. Malcolm Staples told me (Sept. 1897) that he once got an Anteater at Batu Pahat, Johore; they ate it and found it good. In June 1897 I saw the skin of a specimen that had been just killed at Ayuthia, Siam; this was in a flat alluvial plain, with no rocky hills within many miles. In January 1898 we got two specimens at Chantaboon, both caught by natives; one was brought in alive, but it died in nine days. In May 1898 we got a live one in Kedah, which also died in nine days. In each case we could not get them to feed; at night they were turned loose in the lower part of the house (where ants and innumerable other insects abounded), to forage for themselves, but I never observed them even attempting to eat. They were the least intelligent animals I have ever kept; they wandered about the house a great deal at night, and one we let walk in the garden so as to watch it in the moonlight: they showed no inclination to dig or search for food, but walked on till they came to an obstacle, when they proceeded to climb up it; if, for instance, it was a chair, they climbed on to it, then on to the back, and then fell off the other side, and continued walking as before. The prehensile tail is very difficult to detach once the animal has coiled up round one's arm.

*Colour.* Kedah specimen, ♂, uniform dark brown, except end of tail which is buff. Naked skin of feet pink.

This specimen had sixteen rows of scales round the middle of its body, and measured :—

	ft.	in.	mm.
Length, head and body . . . . .	1	8	508
„ tail . . . . .	1	3½	394
„ ear . . . . .		$\frac{3}{4}$	19
„ hind foot, without claws . .	3		76

*Distribution.* Sylhet to Burma, Siam, Cochinchina, Cambodia, Malay Peninsula (Penang, Kedah, Perak, Selangor, Pahang, Johore, Singapore), Sumatra, Java, Borneo, Celebes.

*Popular beliefs.* It is not surprising that strange stories are related about an animal like the Manis. One that I was told in Kedah is worth putting on record. It, says the Malays, is very clever catching ants; putting all its scales at right angles to its body, it lies perfectly motionless on the ground: ants, thinking it dead, swarm over it by thousands, then it suddenly shuts down all its scales, thus imprisoning the ants, and rushes into a pond: under water it again opens its scales, the ants float to the surface, and the wily Manis licks them up comfortably.

## 2. On a remarkable Piece of Skin from Cueva Eberhardt, Last Hope Inlet, Patagonia. By Dr. EINAR LÖNNBERG, University of Upsala.<sup>1</sup>

[Received March 6, 1900.]

Last year Mr. Erland Nordenskjöld visited Last Hope Inlet, Patagonia, to make further explorations in the large cavern, Cueva Eberhardt, which has become famous for the interesting remains of animals found in the deposits covering its floor. He has recently published the results of his researches in a memoir read before the Royal Swedish Academy of Sciences<sup>2</sup>; but in addition to the remains of which he treats there is also a remarkable piece of skin of an unknown animal, which he has kindly entrusted to me for description. This specimen was found by Mr. Nordenskjöld in the oldest stratum on the floor of the cavern, which is chiefly formed of the excrement of the giant-sloth *Grypotherium*, and is sometimes covered with a thin layer of sulphate of magnesia 30 to 50 mm. in thickness. The discoverer informs me that it was found close to a scapula, a claw, and some other bones of *Grypotherium*, and also near a tooth of *Felis onca*. It is therefore probable that the animal to which the skin belonged was contemporaneous with *Grypotherium* and the other members of the Pampean fauna.

Mr. Nordenskjöld informs me that when the piece of skin was

<sup>1</sup> Communicated by A. SMITH WOODWARD, F.Z.S.

<sup>2</sup> E. Nordenskjöld, "Iakttagelser och Fynd i Grottor vid Ultima Esperanza i sydvästra Patagonien," K. Vetensk.-Akad. Handl. vol. xxxiii. no. 3 (1900).